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Nature of reality

(meta)physics of the universe

How light travels? What is special in the H20? Quantum physics, black holes, neutron stars, dark matter, dark energy, ΛCDM, anti-matter, neutrinos, singularity, quarks and much more about the Cosmos: explained.

We set sail to the new horizons.

Teo Klima

Metaphysics of the Universe - Nature Of Reality

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Preface

In science, religion and art true pioneers are always those who expand existing horizons not those who travel parallel with them.

What is the nature of reality? What is an origin of the Universe? Is there God?

Every curious person considered this issues more than once during own lifetime. Perhapse differently formulated and from different perspective. When we get older then we think maturely, we approach things more wisely because we have well learned what brings us pain and what gives us joy. Alas, sometimes we unintentionally repeat mistakes or we see no other choice but there is always a way out. There are always means to succeed. Even confronted with seemingly impenetrable one can pass through safely... And it is never too late to start learning.

Not average people. Not mediocrities. Their mind is concerned with average news served by mass media covering average topics like sports, politics, religion and commercials or streaming popular radio and tv shows. I notice one thing in common: there is no thinking, no brain usage - no purpose other than to entertain. Nothing important is done. People just sit and observe,

laugh to primitive jokes, clap and nod. Mediocre vocabulary is obscure but how could people know anything when they are drowned in shabby journalism full of cliches?

Whenever I open daily news there is always the same kind of cognitive trivialities: political statements, fashion, lives of celebrities, horoscope, culinary advices, wars, crimes, traffic and weather reports and a case of marital infidelity on the other side of the planet.

Same people vote on elections and choose those who promote chauvinism and xenophobia, inflame low passions and promise better future. Politics and religion have common trait: they both promise better future. I want better now.

The bigger the horde the more right they have to claim the lands because democracy is recognized, by some, as rule of the majority. The very term "democracy" means rule of the people (demos+kratos). Aren`t minorities and each individual also part of the people? According to some, they aren`t.

Surrounded by mediocrities I am suffocating in their averageness.

Common folks receive comfort hearing about afterlife. Truth is that no one knows, all religions speculate. When your loved one(s) die in horrible event you are relieved believing they went to Heaven. Calmly you proceed with your life, occasionally burn candle and pray while things return to normal: remarried, new family, new friends,... With time feelings soften, memories fade, eventually you forget those who you loved before because society pushes you forward. There is no time to vaste on contemplation of the past. Now you are here, next moment you are there stretched between obligations. If you become mentally aware they immediately remind you of your never-ending duties. Can I reason in my free time? They ask what free time? We haven`t burden you enough. Give him/her more tasks to do. They ask what reasoning? All answers have been disclosed, a long time ago, in holy scriptures which are written words of the God. Perhapse you disagree

with the divine law? In that case you should remember how we tortured, poisoned, staked, incinerated and crucified those who disagreed with contemporary establishment.

I do remember and I despise imposed convictions. In absence of rationality you skip to violence, opression and punishment. Is there a nobler fate then standing for the justice until the end? Viva Socrates, hail Bruno! World remembers you - not those who condemned you because such characters are too common.

Today there is no need for old methods. Today they plant evidence, falsely accuse, discredit, declare insane, lock in suitable institution, eliminate.

I am insane because I ask questions "how" and "why", I am insane because I seek explanations, I am insane because I want to be objective and rational.

I am insane because I do not accept standard norms of thinking. I respond that in science, religion and art true pioneers are always those who expand existing horizons not those who travel parallel with them.

I am insane because I venture beyond known, beyond possible. Tell me what is possible because you already know everything? Didn`t Ptolemy, in 2nd century, wrote that Earth is in the center of the Universe? Then came Copernicus saying that Earth is not in the center of the Universe and proposed heliocentric model which was subsequently also recognized by Bruno and Galilei. These two were not lucky as their predecessor. Bruno was trialed for heresy and burned alive while Galileo was put in home detention where he spent the rest of his days unable to give public lessons. That is how world treats great minds. You think time brought change? In recent days, an airplane full of scientists was shot down by rebels armed with military weaponry.

Society has predetermined my antish role. I am supposed to breed, work my ass off underpayed, obey and worship. I am not allowed to dream or write freely. I am forbidden to think.

Problem is pointing to an issue not solving it.

Few days ago, I was watching Presidential inauguration. Tv commentator explained that only black, dark grey and dark blue suits and shoes are considered ceremonial. Why not wearing white or colourful? Because society is rigid, inflexible, protocolized ad absurdum, proscribing one thing in the finest detail while leaving other totally unattended: you can commit ecocide but you must wear white shirt.

Lack of knowledge is replaced with brute force (repression). Governments use water and sound cannons, tear gas, truncheons, cavalry and armored vehicles instead of complying to citizens legitimate demands.

Complain and you will get worse. Complain more and you will get nothing. However, your money shall not be returned to you.

During lifetime we are ought to restrain from pleasures. After we die we are either going to the hell or put under constant surveillance. When I am supposed to have fun and enjoy?

Local bureaucrat says: tell me what you need and I will cite you the regulation stating why you can not have it. Then I am going to give the same thing you asked for to my kin or affiliate who lacks required criteria.

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Stupid is an idea that we are alone amid countless star systems: humans proclaim they are only intelligent specie in the Universe. Pretentious and wrong! For certain, they are only specie on Earth which accumulate riches beyond measure, vaste tones of food, kill, enslave, experiment and torture for personal benefit or entertainment. People are shocked seeing wild animals eat each other. Same people are not shocked how and to what extent live stock is treated in factory farms, butchered with cleaver and left to hang in freezer. People scream when someone accidentally walks over their lawn. They do not scream because rain forest, home of entire ecosystem, is intentionally burned and devastated. People in Africa die of thirst while in rich parts of the world people wash their cars and fill swimming pools. I have seen one state employee spilling water with no reason at all - simply because of negligence. Hypocrisy is the major mental illness world is suffering from.

Mankind blames rats for carrying dangerous viruses but it was humans who made sewage. Rats are intermediate not primary cause. Primary cause is vaste amount of human faeces. Taxes should be payed accordingly to individual waste unleashed into environment. Oh, didn't you know that your faeces stream into and pollute oceans? You expose fish to your dumping and then catch and eat the same fish. Maybe it is not the same. Hope that your fish comes from clean countries. Those without toxins ending in blue sea water or with fishing grounds far from coastline.

Both individually and collectivelly, humanity needs to wake up, protect environment on larger scale, become well read and open minded. Without cognitive advance we are doomed for extinction.

Suffering is everywhere caused by wars, exhaustive overindustrialization accompanied with CO2 emissions, deforestation and junk production. Unhealthy, consumeristic lifestyle is dominant in one part of the world, famine in the other. Human race is subjugated to profit. Altruism and empathy are rare or mostly related to missionaries of faith which is not genuine action but stimulated with expected return in the form of spreading the religious influence among those who receive help.

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I have never met a monster. I did meet a bunch of monster-like humans. I had to live and work with such. Liars, primitives, sadists. After commiting atrocity their face becomes distorted showing deformed smile. Confronted with their evil deeds they promptly counter attack. Why do humans invent monsters? Because they need monsters to look better themselves. In the absence of monsters, people are left with their own monstrosities. Same reason determines common depiction of aliens who are almost always ugly, unpleasant at best, dangerous, malevolent. Certainly, some alien species are like that but not all.

Bullies always seek weaker victims: handicapped people and animals are often their targets. Monster-like humans put explosive in a poor animal body opening and ignite the fuse. Blast destroys half of a head or gastrointestinal tract, depending where an explosive was placed. Wretched animal drags itself away and dies in horrible pain. If belonging to a congregation these individuals are called "little innocent angels who are just playing" and they are forgiven by their local priest after doing confession or praying service. Goddamned fundamentalists! The world is constantly dialing a wrong number because of religious nonsense. Barbaric behaviour must not be accepted. Cruelty over animals and destroying environment should not be encouraged. Instead, religious membership protects savages. In extreme cases, it even gives them right to do atrocities.

I am willing to pay for every mistake I do after realizing what I have initially done and if I repeat the same mistake. Not for the mistakes I did before. They are embedded in my counsciousness and it is enough. I was not born with the life manual. How can I know about natural laws and empathy prior to learning? Learning by myself not in school. Education system has taught me nothing useful because it only offers stupendous amounts of unimportant data presented by average lecturers. Everything presented in this book, and much more, I have learned on my own.

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What is science? People do not distinguish between its basic principles and commercial or military exploitation. They think of it as malevolent agency. They consider respected scientists to be foreign agents who promote atheistic worldviews. Alfren Nobel didn`t invent dynamite to kill anyone - later misuse made it notorious. Manhattan Project wasn`t applied science department on the University - it was army program. Everything, including science, can be used or misused. Famous cosmologists do not talk about The Big Bang in order to deceive general public. They talk about it because it is well grounded theory, best suited model for Universe origin based on available evidence and our current understanding of nature.

Fanatics claim they have their own science: religion. Truth is they don`t even have their own language. Contemporary languages are derived from antique - mainly Greek, Latin and Sanskrit - while modern religions draw root from Sumerian, Babylonian and Hindu myths, and Pythagoras, Plato`s and Aristotle`s philosophy (see: cosmic anthropology).

State education curriculum does not follow contemporary science. There is no cosmology, no quantum physics. We are offered an obsolete set of data and superficial insight into the reality. Almost nothing I am writing about doesn`t reside in school textbooks. I was surprised how many crucial facts were hidden from us. To make things worse, empirical knowledge is countered with religious class teachings. Young people are exposed to naive explanations instead taught to rely on objective truths. There is no cognitive development. Everything interesting and useful in life I learned by myself from personal experience and available literature. State education system is worthless, except reading and writing, not producing an enlightened individuals but indolent morons.

Children from noble families go to elite schools, travel abroad or receive private tutoring. Their future in the state hierarchy is secured.

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There is a language teacher not fluent in grammar.

There is a psychologist who gave lectures at faculty speaking two hours without providing single important information.

Semi-literate idler drunkard finished theology studies. He can now lecture about God.

Looking at these examples I wonder how such people could receive their degree. Well, sometimes criteria becomes loose. If you have proper affiliation you can obtain any degree you want without an effort whatsoever.

This is not education I desire. On contrary, it is the reason why I despise official learning system. I want to be lectured by true experts not some schmucks who got their diploma due to family ties, kin or political channels.

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First Universities where founded by people with no academic title. Titles came later, after Universities were founded. Today, many people have titles but lack expertise. Today many people have found their place in science but science haven`t found it`s place in them.

I am often discredited simply because I am not an expert. At the same time, alleged experts are wrong. Is it more important to be right or to be an expert? People confuse being an expert and saying the truth. These are two separate things. To be an expert certainly adds weight to that person's opinion. However, it doesn't imply veracity. You need another expert(s) to verify or disprove primary source, to give second opinion which can be totally opposite. What is the truth? Solution that functionally operates long-term

without any problem.

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Talking about vanity? There are bureaucrats with administrative degree who have more letters in their title than professor emeritus, PhD and Noble prize winner.

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I wanted to illustrate weight of a neutron star. I roughly calculated that one teaspoon of neutron star weights as entire Moon. After I posted my simple illustration online, which is totally enough to make the point, certain individual replied that my calculation isn`t accurate in decimals. He posted allegedly precise number and attached an insult with it. Forum administrator temporarily closed his account because of an insult. I never claimed that I will calculate the weight of a netron star precisely. I could if that was my goal but I just wanted to illustrate neutron star`s weight which I did perfectly. Some people are solely bothered with exactness not with the meaning.

So, if you let me, I want to simply illustrate weight of a neutron star (without concern for details): one teaspoon of neutron star weights as entire Moon. If you try to hold such teaspoon it will tear your arm and fall deep in the ground. Neutron star is very heavy due to its severe density.

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Media is main contributor to the global fuss serving contradictory and biased information. This is done deliberately to favour the ruling political, financial and ecclesiastic elites, in order to secure own working status, or data is sneakily pushed forward by secret services.

Public discussions are full of meaningless, pointless, ineffective babbling. Take all the myriad of words used and you can not cure common cold or boil an egg but an empty talk goes on and on. The purpose is to cloud the facts, to blur the truth, to avoid real scrutiny, to deter us from important issues and thinking.

Media topics stay totally unanswered or apparently solved and replaced with new ones. What is breaking news today shortly after, in a matter of days or weeks, disappears from the screen.

During Covid-19 pandemic, caused by SARS-CoV-2 coronavirus, I have read an article in which author explained usual dynamics of virus spreading and predicted ending of global pandemics in about six months. No one else nowhere explained entire situation with such accuracy and correctly predicted an ending which indeed came in six months as that author said. This article was not published by mainstream media but some independent web portal. Generally, it was ignored or marginalized at best. Since I have read many articles about Covid-19 pandemic I haven`t give special attention to this one. I didn`t mark the source. Afterwards I wish I did because it is a great example how mainstream media, scientific community and world health services oppress those who speak the truth and truth itself either due to incompetence or conflict of interest. I would like to meet and talk to that author. He is true expert. Not like those who governed the crisis.

Terms denoting significant phenomenons receive extended definitions instead of introducing authentic classification. For example, there was strictly mathematical singularity which received physical connotation with the discovery of black holes, because this two is practically related, but then the same term was applied in technological sense. Now term singularity alone means nothing outside basic interpretation (unified quantity). In order to determine what you mean by it you must specify is it mathematical, physical or technological... The Big Bang theory was name solely of the cosmological explanation of the Universe evolvement. Then they named popular tv sitcom likewise. Now you have to specify what do you mean using that phrase... These are two trivial examples but much more serious problems can be

found.

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Fools... Less they know, louder they become! Less they have to say more they talk. Confronted with knowledge they claim they knew everything from the start while the most brazen of them will even claim they said it before you. Uninvited, unrelated to subject or lacking expertise, fools approach and interfere in conversation.

The most dangerous fool is an ambitious one.

No public school or faculty makes you smart. They give you a piece of paper stating that you attained knowledge in the respective field. World is full of certified experts and intellectuals who keep talking about solutions but never provide any.

Many people prefer quantity over quality. They emphasize number of books someone has wrote and their extensiveness, even use it as an argument to promote certain author. Then I remember writers like Lao Tzu and Sun Tzu who wrote only one slim book each yet creating genuine masterpieces, classics of literature, matchless sources of wisdom.

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One of society`s greatest achievements is teaching people how to march with a rifle on their shoulder. People are proud for walking identically and behaving uniformly. The more they lose their personality the better because conscious individual is threat to every corrupted system. Governments want soldiers and servants not explorers and thinkers. Former brings power and wealth, latter only instability in the form of knowledge. The more people

know the more they demand like raise of minimal wage and improved health security.

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Purpose of this volume is not to entertain or flatter. If you are looking for special effects then you are in the wrong place. Purpose of this publication is to discern the roots of existence, to answer the fundamental questions: what is the source of reality? Is there God? What is our role in the cosmic plane (if we have any)? And to explain the most interesting physical phenomenons discovered so far.

Introduction

Strive not to be only passengers on the ship of destiny but also it`s helmsmen.

If you search through Internet you will find that important informations are scattered across and that it takes time to detect a single precise answer. There are two preconditions before you can start exploring: having outstanding English language skills and a familiarity with the Web search tools yet both preconditions are fading away as time passes due to the technological advancements of the translation and browsing software. Then you have to find relevant sources and compare different relevant sources because there is often significant variances or even discrepancies present. I caught myself few times citing a seemingly credible source and later discovering that it was wrong. You simply must not thrust anyone or anything rather check everything by yourself. Moreover, double and triple check. Of course, this action requires objective analitycal-critical approach not possessed by the majority of people.

What is the solution for all problems? Education and learning.

What is "learning"? Is it pure data infusion following "the more the better" approach? Most people think so because public educational system and popular tv quizzes promote vaste of trivial facts but it isn`t. Learning is a much subtle process which includes searching, comparating, weighting, filtering, accepting, discarding, connecting, contemplating, concluding and, finally, testing or applying.

That is why old Masters said "learning is not just adding but deducting as well" or "you must unlearn what you have learned". I mean, they bombard us in public educational system and mainstream media with theoretical, disconnected and impractical knowledge that we can not use in the everyday life.

One can search for the truth or accept predetermined viewpoint and without any scrutiny which is a neat way to avoid personal intellectual endeavour at the expense of own cognitive demise.

To understand something in its nature you must dive deep, distance yourself, observe the matter from every possible angle, internally and externally, separately and completely.

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Dear readers, my friends, I have but one single goal: derivation of the "Grand Unified Theory" or the "Theory of Everything". Some have started, like late Dr. Hawking, and I will continue. Despite the obstructions, false accusations and insults made against me. Despite an underestimation. Despite all odds.

You ask... Who am I to challenge the God(s)?

The God(s)? Or those who claim to speak in their name?

On contrary, I do not claim to speak for God, an absolute Supreme Being. It doesn`t need a spokesman. It has the power! It has the megaphone - the quantum field, the cosmic neural network to directly reshape and reorganize reality as It pleases.

Visual, symbolic signs are not divine messages. They are misunderstood insignificant statistical occurrences. Instead, look into the complexity of existence. Observe the paths and the crossroads.

In my mind I venture deep into the Truth.

Yet... I do not claim to speak the Truth.

There is no need.

The Truth speaks for Itself.

Just like the Sunlight shines: independent of anyone's assistance.

Where we stand today?

We have plausible theories about Universe origin, both scientific and religious, none entirely disputable or indisputable. That is exactly why they are called "theories". My personal view is that there are four (4) equally possible first causes of this Cosmos: 1) God, 2) Nature, 3) higher specie or 4) computer simulation (initialized beyond this reality). There are only two possible causes of entire existence: God or Nature (Ex Nihilo).

Why God? Because using Occam`s razor principle the simplest explanation is

the most convincing and very likely true. But it is actually more an excuse than an explanation because you just moved the question one step further. How did God came to be? It is eternal. It didn`t had to come to be.

How Nature itself? Either by Penrose CCC, my Logical Transition Theory, combination of both or any other reasonable model. It is mind-blowing fact that the Universe could be the perfect pendulum but it just could be swinging back and forth eternally without beginning and originating from nothing. My concept of Nothing includes two logically detectable properties and related values: volume (no-space or infinity) and lack of duration (no time or eternity).

Third and Fourth solution do not give the final answer about an origin. Higher specie, coming from distant corners of the Universe or from higher plane of existence, could have planted life seed. The supercomputer could exist outside of this reality or it could be invented in a distant future and enabled. Although equally plausible, this later two (higher specie and virtual reality) just move us one step in an infinite regress I want to avoid.

Hence, there are two origins to discuss: 1) source of this Universe and 2) ultimate source, source of all. Source of this Universe can be either of the four: God, Nature, higher specie or simulation. Ultimate source, source of all can be either of the two: God or Nature.

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There is very interesting thing called the "cyclic redundancy check". It is an error-detecting code used in a digital environments for the purpose of discovering and repairing accidental mistakes that occur during the program execution.

https://www.scientificamerican.com/article/are-we-living-in-a-computer-

simulation/

Dr. James Gates, theoretical physicist at the University of Maryland, spoke about "an error correcting codes" that he found in his research: "They are present in the equations I was studying about quarks, electrons and supersymmetry". Wow! So, according to the dr. Gates, the Universe is using an error correcting codes to straighten itself when necessary.

In 2003. University of Oxford philosopher Nick Bostrum suggested that members of an advanced civilization, with sufficient technological background, could have started simulation of the Universe we live in.

Higher specie solution, besides extra-terrestrial or extra-reality beings, includes members of the human race arriving from the future or another place of an origin different than ours in whatever terms we speak (galaxy, Universe, reality).

Higher specie could have planted a life seed. It would neatly explain the Cambrian explosion. But I still think that the Cambrian explosion happened due to the specific change in the Earth`s chemical composition when larger amounts of certain element(s), biologically crucial for life development, became available.

Higher specie may have character of 1) benevolent scientists and explorers or 2) malevolent colonizers and slave traders. This second possibility is exactly why I am enraged with sending messages, like Arecibo and later, in the outer space. It is a notorious stupidity. It could even be that aliens which arrived accidentally on the Earth, accidentally because of the vastness of the spacetime or their contemporary technological inability to precisely choose the place and time of an arrival, sort of random quantum jump, decided to send the message with a sole purpose of informing their headquarters.

I would consider every message sent being an act of treason against the humanity. Or dangerous recklessness. Very weird fact is that known scientists, acclaimed experts like Sagan and Drake, did it back in 1974. to a specific target about 25,000 light-years away. What is there? Messier 13 galaxy (M13) catalogued as NGC 6205. Why did they choose that spot? 50 years later Arecibo telescope, which they used, has suddenly collapsed.

Others like Hawking disagree saying it is hazardous. I have the same opinion.

Hawking said this at the Breakthrough event in 2015.: *"If you look at the history, contact between humans and less intelligent organisms have often been disastrous for the later and encounters between civilizations with advanced versus primitive technologies easily could gone bad for the less advanced... A civilization reading one of our messages could be technologically billions of years ahead of us. If so, they will be vastly more powerful..."*

Nowadays, some scientists want to repeat the message with much more details included. They call it "Beacon in the Galaxy". Don`t you have wiser things to do instead of pointing every potential malevolent entity toward us, the Earth, our home?

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Concentrating the sufficient amount of energy into the maximally small area, using strong pinpoint lasers, we can break spacetime continuum apart. With certain risk involved... Complete disaster.

What is the "Grand Unified Theory" or the "Theory of Everything"? It is the search for an absolute Truth, for the cause and an explanation not just of the Origin of the Universe but any reality existing beyond it.

Devising GUT (ToE) is like playing with the ultimate puzzle, putting all the pieces together to discover the final image.

Entire Universe could be just a tiny dot in the overall span.

What if existence is ... Fractal?

Universe offers numerous clues which we must properly account in order to decipher the cosmic code.

There is an evident order in the Universe: everything is a logical consequence of the relevant prior factors involved.

There where is an order must be the Law.

If there is the Law... There must be the Lawmaker!

And that Law must have divine reflections in its design revealing us parts of the Creator`s identity.

God can create stone too heavy to be thrown which It can throw. Practice makes perfect. God will train and throw the stone when It feels ready. We have satisfied both criteria: "can create stone too heavy to be thrown" and "God can throw it" either by 1) introducing a little physical exercise or 2) accounting for the God`s transcendence by means of quantum mechanics where both situations occur simultaneously - in different temporal zones or entirely new realities.

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Do you know what is an infinity? It is a no-space.

Do you know what is an eternity? It is a no-time.

Emptiness is way deep! The limitless void, an eternal darkness. No borders, no bottom, no beginning. Since... Forever.

Only two things that certainly need no prior cause for their existence are "no-space" and "no-time". This two are the true relics.

No-space needs no cause for its existence.

No-time needs no cause for its existence.

Why would they need a cause to exist since they do not?

But joined (multiplied) they produce spacetime and then the fun starts... What merged them? Pure logic: if no-space (nothing) exists for no-time (eternity) then they must went through the phase transition consequently becoming an initial singularity which is the first thing that had prior cause(s) of its existence: nothing and eternity. As well, as being the start of the spacetime.

No-space and no-time when together (multiplied) switch into the spacetime. -S multiplied with -T give positive result ST.

I do not claim that I will derive "Grand Unified Theory" or "Theory of

Everything".

I do not claim that I will explain the nature of reality or phenomenon of existence.

I do not claim that I will reveal divine secrets or Nature`s origin(s).

Because I am being realistic.

Maybe one hundred thousand (100.000) years of continuos scientific effort, involving generation after generation of the brightest minds humanity possess, will suffice but just maybe.

I do claim that the task is intriguing and attractive. Every little discovery brings joy. Thinking about origins and their roots makes me wonder.

Give! Come on!

Thirsty for knowledge, hungry for understanding we walk the path

Few in numbers, courageous and unwavering enthusiasts

Not only passengers on the ship of destiny but also its helmsmen

Developing sails toward new regions of an infinity.

Row, row bravely with your mind through the cliffs and flows,

Through cracks and cuts of the unknown and astonishing

Fascinating, enchanting, intriguing, beautiful.

Don't accept "enough" and "no," always ask for more and more.

Just give, come on,

Build on existing foundations.

And don't stop for nothing.

Because (s)he who stops has never actually moved.

Scientific method

Let an evidence lead you toward the conclusion not the other way around.

I will start with basic terminology:

Argument is motive for or against subject of discussion. It can be false, quasi or valid. False argument is misrepresented actuality, quasi argument sort of rhetorical sanctuary, valid argument is conclusion based on logical reasoning.

Dialectic is a set of mental skills and procedures which enables an individual, or group leading a discourse, to weight the contradictory views, in any conflict of opinions, by examining the respected arguments both in the favour and against each side in the conflict - equally. Properly learned, dialectic makes you adept to determine the truth despite having prior personal conviction or prejudice that would otherwise limit your mental efforts. The fine, dialectical method of an inquiry acts as an inhibitor of a self-delusion, an eraser of every possible subjectivity in resolving the issue involved.

Generally speaking, axiom is an evident fact. In mathematics, statement assumed to be true without any proof.

Theorem is proposition based on axioms.

Empirical evidence is matter obtained during the course of scientific inquiry.

Experiment is the scientific technique used for testing or demonstrating.

Scientific fact is experimentally confirmed and verified statement.

Scientific method is the mandatory procedure for performing scientific tasks. It has multiple stages: observation, inquiry, formulation of hypothesis, experiment, analysis, conclusion, verification.

Universal or particular, truth is a statement which can not be disputed by any rational means. When such statement is repeatedly affirmatively tested using scientific method it becomes accepted as the scientific truth.

Universal truth is a statement valid for all units inside the (broader) set.

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Next I will describe three levels of recognition an idea can have in academic community:

1) Hypothesis is an explanation formed with respect to available evidence.

Thesis is a claim proposed in dissertation or other scientific paper.

2) Using proper experimental methodology, both hypothesis and thesis must be adequately substantiated in order to become scientific theory. Although

highly probable, scientific theory isn`t necessarily true.

3) Scientific law is unchanging standard which once established always stays true under the same conditions.

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With foundation laid, I can answer the question "what is the purpose of science" and acknowledge main contributors in development of scientific method.

The purpose of science is to build thorough and precise understanding of a natural phenomenons observed around us which is possible only with the scientific method applied.

Historically, philosophy of knowledge began with ancient Greeks, Aristotle and Plato, but enlightment period introduced two main systematic divisions in epistemology being empiricism and rationalism. Empiricism (Francis Bacon, John Locke, David Hume) advocates sensory experience while rationalism (Rene Descartes, Gottfried Wilhelm Leibniz, Baruch Spinoza) emphasizes innate cognition and reason as primary inputs for learning. Synthesized by Immanuel Kant, knowledge starts with sensory experience but is interpreted and organized using mind. Thus both are essential for learning.

G. W. F. Hegel introduced improved approach to dialectical method by implementing thesis, antithesis, and synthesis into the process of reasoning. For Hegel, necessity to resolve contradictions is an intrinsic driving force behind each step of logical determination ultimately leading to the development of an absolute, unconditional idea, "the circle of circles", which encompasses all previous concepts and forms.

Observational and experimental approach was heavily promoted by Galileo Galilei, Robert Boyle and Isaac Newton.

Isaac Newton and Gottfried Wilhelm Leibniz, independently, developed mathematical theory of calculus widely used in modern science for differential and integral calculations.

In 20th century, one name is definitely highlighted: Karl Popper. Considered to be the greatest philosopher of science, Karl Popper proposed falsifiability as scientific method. Instead of proving, we should aim to disprove hypothesis and theories. "It is precisely the proliferation of divergent theories which promotes growth of the scientific knowledge " - Popper explained.

Although lacking revolutionary ideas, modern times emanated innovations like interdisciplinary research, integration of advanced technologies (computers and AI), open and citizen science, ethical perspective.

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Best recommendations I can give to future scientists are:

a) Let an evidence lead you toward the conclusion not the other way around.

b) Avoid rooms with low ceiling and absence of fresh air.

c) Lead a healthy lifestyle, sleep enough.

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Not a single human or animal should be involuntary exposed to any kind of cruelty, contamination or sacrifice during scientific research. This is the line I would never cross. Empathy above all!

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Those people who say they believe me have entirely missed my point. I seek enlightened individuals not followers or devotees. I seek those who are able to objectively examine the matter on their own, think independently and reach rational conclusion.

You can not recognize the truth other than by understanding logic and dialectics. It is not important to believe that fish is in the water, in order to cook a dinner you must catch the fish. Likewise it is not important to believe in the truth - you must find it.

Solving infinity

Infinity is a never reached potential. It`s nature is dynamical, not static.

Opposites emerge from each other: 0 = -1 +1 and +1 -1 = 0.

What do we get when we divide any rational number with zero (0)? We get an infinity (∞). My Windows calculator (standard mathematics) says "Cannot divide by zero" which is illogical.

What do we get when we divide any rational number with an infinity (∞)? We

get zero (0). My Windows calculator (standard mathematics) doesn` even offer calculations using an infinity. How silly.

Here is an explanation:

Let us consider a simple equation were Z equals X divided by Y.

Z = X / Y.

Let us try different values for Y while we keep X at 1 for the sole purpose of simplifying because the same principle applies for any X rational value. Zero (0) and an infinity cases will be discussed subsequently.

First situation: X =1, Y = 1 or dividing 1 with 1. We get 1 as well.

Z = 1 / 1 = 1.

Ok?

Now change the Y value into one half or 1/2 (0.5). In other words, decrease the Y value.

Z = 1 / 0.5 = 2.

Z value has increased.

Let us see what happens if we increase the Y value.

If Y = 2 then Z = 1 / 2 = 0.5

Z value has decreased.

By decreasing the Y value we increased the Z value. By increasing the Y value we decreased the Z value. Obviously, Z and Y values are inversely proportional. The more we decrease or increase one of them the second will equivalently increase or decrease (do exactly opposite).

Good?

Let us gradually decrease the Y value using exponential change to accelerate the process: Y = 0.1, Y = 0.01, Y = 0.001, Y = 0.0001 and so on...

Now we have this:

Z = 1 / 0.1 = 10.

Z = 1 / 0.01 = 100.

Z = 1 / 0.001 = 1000.

Z = 1 / 0.0001 = 10000.

Etc.

The more we decrease the value of Y equivalently we increase the value of Z.

Right?

Finally, if we divide with zero (0) we will get an infinite value for Z.

$Z = 1 / 0 = \infty$

Isn`t that logical?

Let us increase the Y value.

Y = 10, Y = 100, Y = 1000, Y = 10000 and so on.

In this scenario the value of Z will equivalently decrease!

$Z = 1 / 10 = 0.1$

$Z = 1 / 100 = 0.01$

$Z = 1 / 1000 = 0.001$

$Z = 1 / 10000 = 0.0001$

Etc.

Finally, if we divide with an infinity (∞) we get zero (0) result for Z.

$Z = 1 / \infty = 0.$

In the case of the black hole singularity who knows what this revelation

implies? It is beyond rational understanding.

What if we take zero (0) or an infinite value (∞) for X. Now things could become tricky... Or not? Let`s see...

We have this two possible situations:

Z = 0 / Y and Z = ∞ / Y.

In case X = 0 for any Y rational value the result will be, in pure mathematical terms, also zero (0) because nothing (0) divided with any rational number gives nothing (0) in return. For example, you divide the zero (0) into one hundred pieces. You get one hundred pieces of the zero (0).

Z = 0 / Y = 0.

Note that we are talking in a pure mathematical terms were nothing really means zero (0). My concept of the primordial nothing is a different thing.

In case X = ∞ we have:

Z = ∞ / Y = ∞.

If we divide an infinity with any rational number we get an infinity (∞) result back meaning every piece of an infinity is also infinite which is paradoxical because when you separate a piece it has observable form and size. Maybe we must account for it`s potential to grow? The moment you select specific area it has already become bigger due to constant expansion. For example, you divide an infinity into one hundred equal pieces. You get one hundred

pieces of an infinite value each. Otherwise, if any piece is finite then the division wasn`t perfect. Meaning you didn`t divide into one hundred equal pieces. If all pieces are finite then put back together you will not return to starting infinity.

Mathematical conundrum demistified

Axiomatic statements, due to their self-referencing nature, aren`t sufficient to prove own credibility or system`s consistency and completeness.

Mathematicians and physicists have long sought an answer how to calculate with the infinite value(s) depicted by the symbol "horizontal eight" or ∞.

I watched documentary A Trip to Infinity (2022.) and decided to fathom certain misconcepts present in it.

At the start of this documentary, version of the Hilbert's paradox of the Grand Hotel is explained. Basically, the problem is paradox by itself: imagine a hotel with an infinite number of rooms which can accomodate an infinite number of guests but the subsequent conclusion is that there is no infinity. If there is no infinity then how can you imagine it in a first place? I offer counter-example: imagine an elephant which does not look like one. Voila! We have proven that elephants do not exist as such. Silly, just like Hilbert's paradox. There is no sense at all. They say, imagine "countably infinite number of rooms, all of which are occupied". Countably infinite? What are you talking about? Infinity which can be occupied? Hello? Reality check please.

Next, certain mathematicians state as follows:

1) If you divide one with 2, 4, 8, 16, etc. to the infinity and then sum it all you will get one. 1/2 + 1/4 + 1/8 + 1/16 +... = 1. Meaning, infinity equals one. No! Only the specific subsection of the infinity equals one while infinity has infinite number of subsections.

2) If you add one to infinity it still equals infinity, right?

$1 + \infty = \infty$

If we subtract infinity on both sides we get 1 = 0.

Meaning, 1 equals 0.

Therefore, an infinity is absurd.

No! If you can add 1 then you didn`t have infinity to start with. You can not add any amount to the infinity. You can only add to the infinity minus X, in our case 1. Then 1 and -1 mutually neutralize giving result of infinity equaling infinity.

$1 + \infty - 1 = \infty$

$\infty = \infty$

Otherwise, the result is an infinity plus one. If you deduct infinity on both sides then you get one equals one or if you deduct one on both sides you get infinity equals infinity meaning an infinity concept is not absurd.

$1 + \infty = \infty + 1$

$1 = 1$

$\infty = \infty$

3) If you add an infinity to an infinity the result is an infinity. By subtracting infinity on both sides you get infinity equals zero.

$\infty + \infty = \infty$

$\infty = 0$

No!!!!! What a horse... radish.

If you add an infinity to an infinity the result is also an infinity plus an infinity. Or, abbreviated, 2x (two times) an infinity. If you deduct an infinity on both sides then you get infinity equals infinity or if you deduct both infinities on each side you get zero equals zero.

$\infty + \infty = \infty + \infty = 2x\ \infty$

$\infty = \infty$

$0 = 0$

4) If we take a triangle and gradually add corners we get more sides with smoother line curvature straightening the circumference. Eventually, we get a perfect circle without any (visible) angle. Meaning, infinity (infinite angles) equals zero (no angles).

Maybe, you will never truly straighten the circle. You will just make it appear more round. Infinity is a never reached potential.

Draw a triangle. It has 3 corners (angles).

Draw a second triangle opposite to the first, partially overlaying. Now we have 6 corners.

Draw a third triangle with different positioning than first two, partially overlaying. Now we have 9 corners.

Repeat the sequence indefinitely: either in the same manner, by adding 3, or exponentially ("+ 6", "+ 9" or "+ 12") to speed up the process, until you get a perfect circle.

0 + 3, 3 + 3, 6 + 3, 9 + 3, 12 + 3, 15 + 3, 18 + 3, 21 + 3, 24 + 3,... n + 3... ∞

In the documentary, they suggest how an infinite number of angles in a perfect circle equals zero angles. They practically postulate that infinity equals nothing.

Following the mirror logic, if x equals y then it is vice versa as well: y equals x. Meaning, zero angles equals an infinite number of angles or nothing equals an infinity.

No. Their postulate is wrong.

Perfect circle has an infinite number of corners (angles). Not zero.

How many corners does a simple dot have? Zero (0). None.

How many corners does a simple line have? Zero (0).

How many corners does letter "V" have? One (1).

How many corners does letter "X" have? Two (2).

How many corners does a triangle have? Three (3).

According to their logic, a simple dot and a single line by having no corners (0) actually have an infinite number of corners (∞).

Implication is that a perfect circle and a simple dot both have an infinite number of angles and zero angles at the same time.

The only thing that seems paradoxical is their thinking. Unless indeed, an end means a new beginning. If you reach an infinity, which is impossible, then you arrive at the start. Perfect circle becomes a simple dot again. Remember that when you start drawing a circle you begin with a simple dot.

Truth be said, you will never absolutely straighten the circle. You will just

make it appear more round. Infinity is never reached potential.

What do they claim? They claim that an infinity can be reached. How can an infinity be reached, even hypothetically, when the very term means what is "intangible, elusive, unreachable".

Imagine something that is infinite (intangible, elusive, unreachable) but also imagine that we can seize it. It is paradox in the premise. If there is a paradox in the premise than the conclusion must be wrong.

Tell me, wise documentary heads, how will you reach infinity by adding angles to an object, even hypothetically? Because if you do then it wasn`t an infinity to start with. This also applies for the Hilbert's paradox of the Grand Hotel.

5) If we take small and big circle, for example having radius one cm and billion cm respectively, we can draw lines connecting each dot on both circles matching every radius with its longer counterpart?

They are suggesting that circumference of the smaller and bigger circle is the same. Nonsense.

What is a circumference? It is a linear perimeter around the center of the circle in which every dot of the perimeter connected with the middle point has an equal lenght.

$c = 2 \times \pi \times r$

c - circumference

pi - constant

r - radius

Small circle has small radius, big circle has big radius. Circumference is dependent, proportional meaning you can not connect each dot of the small and big circle mutually. On big circle you will have empty space in-between the lines.

6) If you divide 1 into the decimals it seems that respective segment, continuously fractioned ad infinitum, is an infinity in an infinity.

No. You can divide further only by reducing a size of the specimen. It does not mean one equals infinity. It means it can divide infinitely (your count can last indefinitely).

Let us find examples of an infinity in the real life.

There are abstract infinities like one split into a three perfectly equal parts. It is impossible since 1 / 3 = 0.33333 with "three`s" to infinity...

I tried using an online calculator.

1 : 3 (or 1 / 3) = 0.333333333333

But!!!

Reversely,

0.333333333333 x 3 (multiplied with 3) = 0.999999999999

Not 1.

The digit 3, decimal three, continues ad infinitum.

Another example of abstract infinity is constant Pi (π) which depicts the ratio of a circle's circumference to its diameter, approximately equal to 3.14.

Basic formula: π = c / d

π - constant Pi

c - circumference

d - diameter

Although, there are much more subtle ways for calculating Pi like using Machin's Formulas, Gregory and Leibniz account, Riemann zeta function, Newton`s calculus or Ramanujan generator which are all actually an algorithms for extraction of the Pi digits.

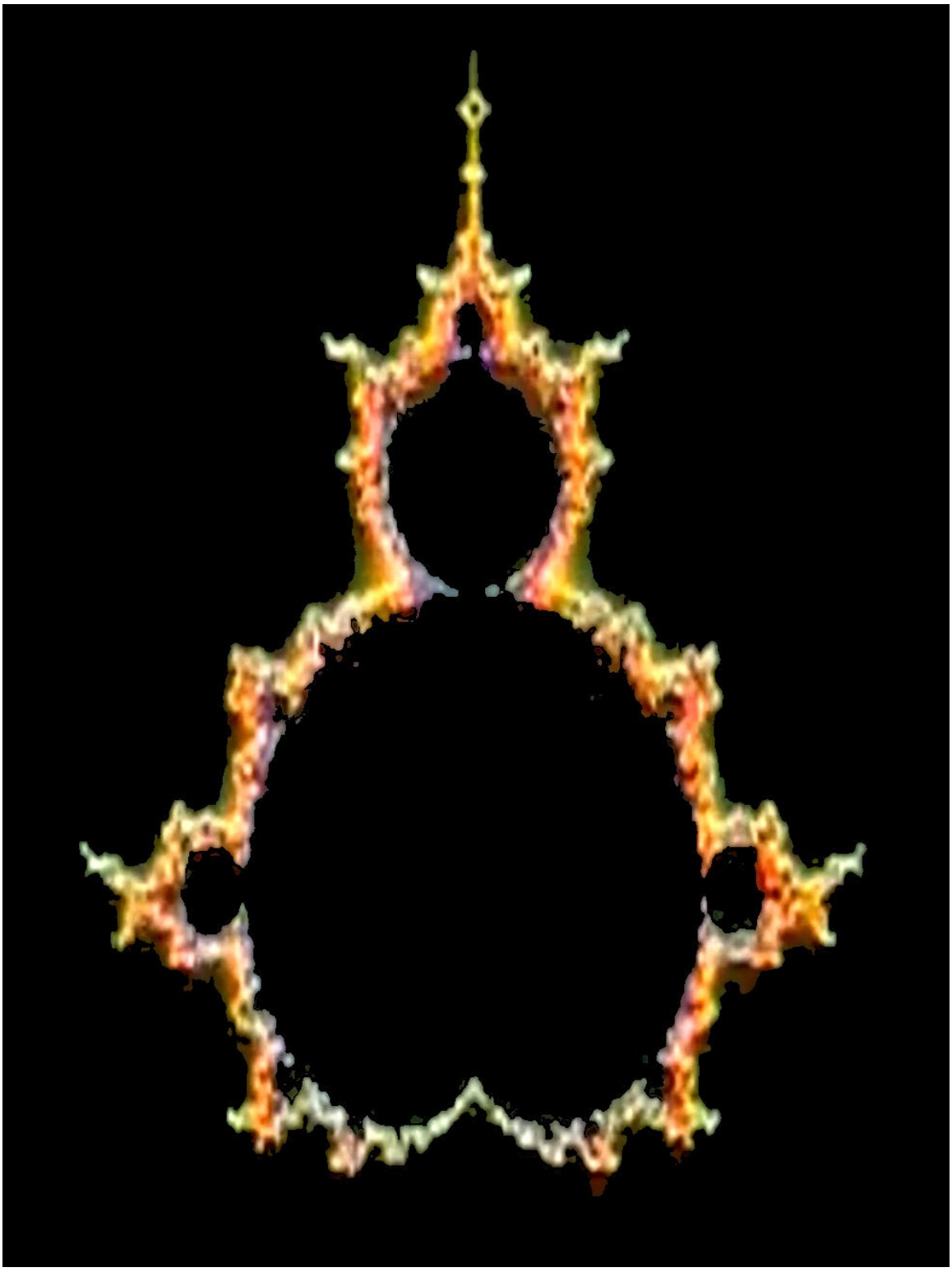
Numbers like Pi, Euler's e, the Golden ratio φ or all square roots of natural numbers other than perfert squares are called an irrational numbers meaning they can`t be expressed as a ratio of the two integers.

Record for saying the most digits of Pi is held by the Suresh Kumar Sharma, from India, who spoked Pi to 70.030 decimals in the year 2015. Some computer programs have calculated the value of Pi to the precision of almost

63 trillion digits.

Great example of an abstract infinity is the Mandelbrot set or fractal curvature producing more and more complex numbers in both directions. There is a great documentary titled "The Colours of Infinity" (1995.) made by famous Arthur C. Clarke in which Stephen Hawking and Benoît B. Mandelbrot explain the beauty of the Mandelbrot set where iteration of the function C (Z) = Z2 + C creates new, similar shapes over and over again, two-ways without an end.

Mandelbrot set



Mobius band is an excellent example of the real infinity. It proves my thesis how an undefined equals an infinite.

You can go as much as you want in any of the two straight directions and you will never reach the end because pathway continues add on. It even looks like symbol for an infinity.

Does Mobius lane exist in real world? Yes, says Einstein. It is closed Universe in which we return to the starting position after traveling for long period of time. Talking about spooky?

In a documentary "Is God a Number?" (1999.) Roger Penrose, Nobel winning mathematician, distinguishes three layers of the reality: mathematical, physical and mental.

Second real infinity is related to the mental sphere.

In a documentary "Bufo Alvarius" dr. Stanislav Grof, Czech psychiatrist living in the USA and one of the founders of the transpersonal (spiritual) psychology, reveals actual experiences induced by 5-MeO-DMT, the strongest known natural psychedelic produced in the glands of the Sonoran Desert toad. Student of a Freudian psychoanalysis, his early professional work explored usage of the LSD in the psychedelic therapy and its effects on the human psyche but also researched Otto Rosenfeld`s ideas.

Dr. Grof separates two modes of consciousness: hylotropic ("name and form" or personal lower self) related to an everyday awareness of yourself and holotropic (Hindu concept of Atman-Brahman) experienced during meditation, mystic seances or under influence of the psychedelics.

I will cite what has one test subject answered when being asked about his latest, scientific, "involvement" with the Dimethyltryptamine: "You just can not prepare for that... You experience truth, the essence, an entire Universe... You experience the moment which lasts forever". Second test subject said: "I

was light that became everything, an absolute unity of all things, an infinity".

Compare Mandelbrot set with common depictions of Atman-Brahman (meditating person) and you will find striking similarity between two.

Is God a number? If yes, it is very special, complex number or the set of very special, complex numbers stretching fractally to an infinity and transcending beyond the conceivable.

This view is not all original because Gottfried Wilhelm Leibniz, Enlightenment period German mathematician and philosopher, already some 300 years ago proposed that a conscious mental activity takes place on the higher levels of an awareness.

Origin thoughts

Every circumstance is a logical consequence of all prior relevant factors involved. Physical reality could be created by an activity on the higher dimensional plane.

Universe is either infinite or not but in either case nothing is infinite. If Universe is infinite then nothing which place Universe now occupies was also infinite. If Universe is not infinite then considering its immense size what surrounds it probably is. We know that Universe is expanding and even faster than previously thought. Expansion means that Universe is not infinite but tending to be. Again, considering its immense size what surrounds it probably is infinite.

When I say nothing was prior to Universe and outside of it I do not exclude phenomenons. What I refer to as nothing could actually just be unobservable for us. In cosmic terms, we see inside visible spectrum while we need special

equipment for the rest. How could we see before, outside and beyond Universe when we still struggle at lower level?

Nothing from which or in which Universe came to be could be imperceptible medium, but not undetectable, hyperreality where dimensions meet and intercept.

Hyperreality is the source of singularities (cosmic seeds) and it connects all Universes into Multiverse. This idea is not related to Baudrillard‘s sociological concept where hyperreality means reality replacement. I am talking about root layer of existence while Baudrillard is talking about false images which distort perception of reality.

Moreover, I believe there are parallel realities each housing its own Multiverse.

Whoever the Creator is why would It stop at one? Like any artist, opus is numerous with various pieces collected into different sets belonging to distinct creative phases. Finally, when the master set is completed God starts totally new work.

Who is Creator? God is an easiest answer but not God poorly imagined by many religions as human like being sitting on a throne above clouds (although It make take any form It chooses) because this depiction implies simplicity, subjectivity and locality. On contrary, God is elaborate, transcended and omnipresent starting as not manifested quintessence, great spirit, supreme incorporeal entity or intrinsic movement of scalar fields. At some point It become bored with endless emptiness and decided to create things. I already become puzzled at what point because for God there is no time: It is eternal, It makes everything instantly, It is never late and doesn`t get old. Truly fascinating characteristics yet this idea requires prior consciousness. Second possibility is Nature: there is no starting point and no prior consciousness instead everything evolved by itself, intrinsically from... Nothing. Even consciousness itself.

It is intellectually humiliating to nowadays see altered versions of Aristotel`s "First Cause" argument denying infinite regress by proposing existence of the Prime (Unmoved) Mover. I like Aristotel`s idea because I am also inclined to think there is supreme, creative entity behind physical realm. It is the simplest explanation. However, we must not draw conclusions based on single, subjective premise. It doesn`t matter what we think. Reality is complex and it is statistically more favourable to be otherwise or at least multilayered. Why couldn`t creation be progressive? God gives birth to Deities which in their turn generate Higher beings who engineer Universe(s). Infinite regress doesn`t vanish because Aristotel disagrees.

Before Universe was created there was no time and there was nothing. These circumstances do not require any prior cause to exist nor they have an end. No time is not same as zero time. Zero time is beginning of time (0 s). No time is opposite of time which is finite therefore no time is opposite of finite meaning it is unlimited. What is unlimited amount of time? Eternity. God had an eternity to contemplate and plan creation, expressed as singularity, while execution (inflation) lasted less than a second. Time and space are derived from eternity and infinity, borrowing value in order to return it without interest.

Eternity is now.

Metaphysical paradox is that eternity equals present moment, never passing everlasting jiffy switching to an illusion of the flow achieved by constant energy transformation.

God as transcended supreme entity does not depend on any physical law nor can be expressed by any quantity or visually described. It is beyond any measurement and practically impossible to understand. No one will ever realize It`s complete magnificence - not even close. What is possible to grasp are only material, observable and detectable manifestations such as our Universe if it was created by God. My best guess is that our Universe was

created by higher, very intelligent specie by planting coded self-unpacking device into the crack of existence known as void.

God could have created things (Creator) or It can simply be everything there is without need to create anything.

How could God supervise all aspects of creation? Does God receive every prayer made by living beings? By having multiple instances each responsible for particular segment. While master instance works on new designs, lower instances are maintaining the system according to higher instructions. Communications between instances are immediate without any delay (quantum entanglement is the proof). Master instance is not bothered with trivial things such as human prayer "can I get a new bike"? Same as in any organisation but with one significant difference - all instances are One. Meaning, there is no hierarchy. Without hierarchy there is no competition because all parts are equal yet having different function. Although not directly involved in supervision of all aspects, nothing can be hidden from master instance. It is aware of everything, everytime, always.

Often, I tried to contact Demiurge in my thoughts. After discarding all irrelevant content, two messages received on separate occasions sound like having divine origin: 1) I am in the state of perfect balance. 2) You have started to think. In first message, God asked about its name presents Itself as perfectly harmonious. Second message is intended for me who have just started to think. There is a long way to go before you understand - God replies or I just project my own thoughts.

Usually, meditators go into solitude, high up in the mountain, underground or deep in the forest to isolate their senses and concentrate. There is too much disturbing signals like radio and tv broadcast. I did it in my home before sleep because I expected silence then. It was significantly quieter compared to daytime but far from silent. Even without mosquitoes buzzing, typical household and street sounds and with technology switched off there was still low background noise. Anyway, this two messages were recognizable and consistent with questions I asked.

During meditation, how can we distinct what is divine message and what are ideas emerging from our mind? First, answer is directly related to question posed. Second, answer is meaningful and revealing. We must discover something previously unknown. Yet, technologically inferior, we can not discern magical from scientifically advanced. We are too easily fooled.

If I can talk to God my questions would be metaphysical and scientific: how many Universes exist? What is the nature of reality? How did you create this Universe? Some are practical like what is Time and can we travel through it? Is there universal medicine for every disease? I am not interested in my personal life. That is trivial compared to forementioned.

Time is a human made concept. Energy constantly transforms and entropy changes creating illusion of the flow. You need energy to measure Time. Actually, you just calibrate. Hence, Time is an energy. To be precise, transformation of energy. What we call now, this moment is current entropy status immediately flying away.

Another illusion could be an overall existence. Maybe all is divine projection. We think we are because God made us to believe that we are. How? With suffering. Pain reminds us that we are mortal. Remove pain and you become free from earthly shackles.

Everything that lives must die. Decay is imminent, oblivion unavoidable. But don`t be scared of death... Once when you are gone you will not feel anymore, you will just seize to be and return energy that you selflishly borrowed. Unless you are caught in a time loop. Then your agony will repeat indefinitely.

To preserve the balance, once created Universe eventually must be destroyed. Death begins with birth. Living means rotting. Living means rescheduling your fate. Eat fresh apple and you will get another day for

yourself under cost of defecation, negative energy discharge causing environmental disaster. Oh, we have built sewage, cleverly transporting our waste down the stream and into an open seas. Polluting, we are messengers of apocalypse. Four horsemen of terror are Cytosine, Adenine, Guanine and Thymine. Thus, act of creation is conditional, existence countered with destruction: everything from nothing and back.

Surely, God haven`t envisioned every detail cause they are infinite. Even God would have trouble with such annoyance. It crafted singularity, tossed it into the void and Universe is what we got. When you break glass cup can you know how will each broken piece look like? Do you need to know it in order to make glass cup in first place? Events unfolded, particles combined, life emerged from still water and wet soil because other mediums (moving water, dry land, air, wood, rock, sand) are inadequate, turbulent or inaccessible.

Everything is a logical consequence of all prior relevant factors involved. Give me enough data and I will tell you the future or reveal past states of the system by merely knowing current entropy status.

Is future spontanious or decided? Do we really shape our own destiny or we just follow predetermined footsteps? When you throw a ball in particular direction that ball has no choice but to follow the chosen trajectory. When it hits an obstacle it will pass on kinetic energy. There are no deviations whatsoever. Is there a freewill? Can ball decide not to hit an obstacle or not to pass kinetic energy?

All things share properties belonging to what is upper in the chain. All things in Universe share properties belonging to initial singularity which share properties with its maker. Whatever you do carries your own signature. You can not have offsprings that don`t look like you because you passed your DNA to them. Otherwise, they are adopted children.

You can counterfeit but then the quality of forgery reveals who you are.

If God knew what will happen it means he knew about all the suffering that will occur. Wars, hunger, sickness, crimes, pain, agony, death. Entire ecosystems are destroyed. If it knew then It is cruel and sadistic. Excuse comes in the form of reincarnation. Those who suffered shall be rewarded after death; those who caused suffering shall be punished (karma). But that law would be universally known and accepted. It is not. Every culture has different religion. Some cultures don`t have religion, some enjoy blood rituals. Who can rely on anything in such chaos? Maybe one day all world will recognize reincarnation as real. In such case, I apologize for calling God cruel and sadistic. Hence, suffering is huge obstacle which points me in other direction. There is no God. Then who or what created everything? Does things exist without being created? Did they produced themselves? How could that be possible? Indeed, God idea sounds easy and true but the mental challenge lies in finding other plausible solutions like nature evolving from nothing or eternal pendulum swinging back and forth without beginning.

Everyone can say God. I hear uneducated, semi-literate individuals yelling God is Creator. Explain, give reasonable grounds for your belief. Don`t repeat what you have heard in your religion class. Otherwise I am looking for new interlocutor.

Aside what people believe, God "is" or "is not". Later should be taken conditionally because for us humans, with our current scientific insight, quantum (subatomic) domain remains a mistery as well as spiritual (energy) realm. What I say "is not" should be considered more like transcendent or hidden from our sight. Literally, "is not" does sound utopian. Maybe God is in both states simultaneously? But how can God of such dual, binary nature return from the state of no being? There must be a safe switch beyond highest consciousness. Meaning, even if It "is not" It still "is" which is illogical. Thus specific approach remains. It is either existing or not existing, not 1 and 0 at the same time. Is there a third possibility? Aren't singularity and void just like being and not being interwoven in the spiral of existence?

If God "is" there are three possibilities for creation: ex nihilo by divine act,

primordial material existed prior to manufacturing or everything is God`s projection of reality.

Or Universe could have started naturally... From nothing. When two sounds having identical characteristics, arrive in straight line perfectly opposite to each other and collide they cancel out mutually (destructive interference). When positron and electron crash together they annihilate each other. Equation A + B = X can be written reversely: X = A + B. Just replace the unknown values of A and B with 1 and -1. Then we get 1 + (-1) = 0 or, reversely, 0 = 1 + (-1). In order to create Ex Nixilo you must preserve absolute balance between positive and negative but antimatter is found in obscure quantities, mostly artificially produced. If naturally created, what happened to it?

What would God, as supreme architect, create first? Fields (frame) because one can not work in chaotic state. You must have the reference points to determine quantities. Therefore, ratios have fundamental origin. In God's mind he sees dimensions not their values because for God values are automatically derived from the geometry. Best said, God knows the numbers by simple observation. It doesn't need to translate actuality numerical as we humans must in order to compare and calculate.

If mathematics is an utmost fundamental building block of nature, with binary base and encoded on Basic Input/Output System read-only memory chip, inflation could have been exponential field growth determined by function 2 to the power "n, n+1 where n=0" (1, 2, 4, 8, 16, 32, 64, 128, 256, etc.). Same as data is visualised on a computer or tv screen, this reality can be holographic simulation having outside origin.

There is an argument how this Universe is too vaste to be produced by any contemporary computer. Who is talking about contemporary? I am saying that in future people will have much stronger machines than today as well as more developed programming code. Prospects of quantum engineering and artificial intelligence are already seen yet questions of ethical character remain unsolved. Are human brains going to be replaced with electronic

chipset? Also, observe that we, each of us individually, only process part of the reality by ourself, only our immediate surrounding while background is pretty obscure. Besides, 3d virtual reality equipment already creates rather convincing ambient.

Everything must have its counterpart, the negation of itself that completes the whole picture. If you exclude "nothing" then you have nothing to compare everything with. If you do not know what is nothing how can you know what is anything? If there is no darkness then what is a light? If there is no ugly how can you appreciate the beautiful? If you haven`t seen the black clouds above your head how can you admire a sunny weather? Opposites draw on each other. If there is God there is also not God, which state resembles energy and anti-energy relation. What you refer to as the Deity is one aspect of the quintessence with other being the Devil. What is between plus one, Yang, Vishnu, Asha, and minus one, Yin, Shiva, Druj? The quintessence of the all. The all there is, manifested, hidden or transcended.

Intelligence

Human evolution is an ongoing process. After body, it is time for the character.

I hear utmost nonsense all around.

Citizens want to be protected during epidemic but they refuse to obey safety measures.

Local court where I worked had two entrances: one for employees and one for parties. Instead of keeping open both they closed one during the Covid-19 pandemics and then all people had to enter through bottleneck of the same gate making dense crowd increasing chances of infection. It was a smart move people said.

I was complaining against reckless behaviour such as not wearing safety mask and breaking social distance rule. Violators enmassed, contacted their like-minded affiliates in judicial hierarchy and counter-accused me. Those who received vaccination, like I did, were accused of spreading the virus and threatened.

Forget laws and protective measures, if you do not comfort to the stupidity of mass they will swarm you.

Government declared victory over Covid-19 before the main wave arrived. They avoided obeying protective measures themselves.

National Crisis Headquarters, a.k.a. National Civil Protection Headquarters, consisted of few physicians, not specialized in virology, infectology or epidemiology, and more than twenty bureaucrats and political representatives.

Many people have undeveloped communication skills. They do not understand clear expression or (malevolently) change meaning of the said, invent rumours and spread false gossip. Some people like to invent nicknames for others and ridicule them. Some like to pull things out of context and emphasize irrelevant parts.

Some people deprive themselves from sleep. They settle at 4-6 hours claiming it is enough. Enough for what? To be anxious and much less functional.

Some people break their tongue to properly adress you. They refuse to memorize your name or just replace it with suitable generalization like "colleague". They rather forge idiotic or humiliating label and utilize it instead.

Some people exchange simple, correct terms for inappropriate, complicated or distorted ones. They do it to make their poor vocabulary appear wider.

Some people excessively expand phrases and sentences to appear smarter.

Some people wear beard and glasses to appear smarter. They maintain academic look solely for cosmetic purpose.

Some people love to provoke others. With time they`re getting better at it. They are discrete and diligent. They wait suitable moments when there is no one neutral around to witness harassment. I endured and endured. Busy, spontaneously, naively I responded in a company of others . It looked like I am the troubled one.

Many people swing between extremes. There is no middle for them.

Some people love to control others.

Some people have double standards. Certain societies have double standards.

Some people love to follow and spy others either for personal satisfaction and to have gossip material or to inform their higher rank.

Some people change their opinion every 5 minutes.

Some people drive up and down the hill with car and later say how they

climbed mountain. Or they drive deep in the forest, stretch legs and turn back. They say they had a long walk.

Some people are bothered with everyone and everything else but not at least with themselves.

Some people give contradictory instructions. For example, one boss tells you to do one thing. Other tells you to do something else at the same time. Whatever you do it is impossible to satisfy both conditions and you will turn out to be incompetent.

Some people are full of advices. Most often, those who haven`t succeeded themselves.

Some people seriously lack manners. They loudly munch, belch and fart at the table or talk with the full mouth.

Some people don`t let you eat in peace. They observe you, they watch your plate, what and how much you consume and constantly interrupt your meal with comments or offerings.

Some people avoid hygiene. I have seen a lawyer not washing his hands after intense, prolonged, evil-smelling defecation. He just exited toilet cabine and went straight to the court hallway where he shook hands with involved parties.

Some people accumulate worthless things. They waste space leaving no room for breathing.

Some people entirely fill household or workplace fridge with their items. I

can`t put one tin can of energy dring inside. When I complain they say the fridge is already full of my belongings. Some people forget about "use by date" and leave their things in the fridge. When decay starts and terrible smell appears others have to clean the mess.

Some people love to violate privacy of others.

Some people love to look through other people`s windows and try to catch every detail of interior and what is going on. Later they gossip around about seen.

Some people love trophies. I sincerely hope that their head will also serve as someone else`s trophy.

Some people impose themselves to others. They are boring as flies and tiring as mosquitoes.

Some people love to challenge inferiors and compete with them.

Some people ask me if they can swim in cold water then why can`t I?

Some people are impossible to get along with. They are unwilling to make any compromise.

Some people love to argue.

Some people consider themselves to be 100% right leaving absolutely no margin for error. Today I went to buy groceries in a local supermarket. In one cooler I found a meat pack with no price tag. I turned it upside down,

checked both sides. I looked all over the cooler, I went left and I went right to check neighbouring coolers but I haven`t found price. I turned around and saw none of the employees. I decided to bring meat pack to a cash register in order to disclose what is the respective price of that meat pack. Woman on a cash register told me the price. I selected another similar product of less value and she took the meat pack with her back to the cooler while I was waiting to pay. She came back claiming that the price is visible. I answered that we could both be right in case someone moved that meat pack from its original place to another cooler - the one where I found it. No, she says, the price is visible. I asked: do you want me to show you where I found that meat pack. I am sure there is no visible price there. No, the price is visible! I payed for selected products and left the supermarket. No point of arguing with her because she must be 100% right leaving absolutely no margin for error! I had alike situations in different supermarkets once involving certificate of returned packaging. Again, supermarket employee had to be 100% right leaving absolutely no margin for error. The worst thing is that other employees and supermarket management defended 100% their associate leaving absolutely no margin for error. People are subjective and protect their own. What happened with customer is always right?

Some people call police for minor disturbance. I was reported for silent objection against mistreatment in the state-owned bank where I had to wait 45 minutes in the line because of irritatingly slow bank clerk. After the police had arrived I was harassed by branch manager. You must understand that in the state-owned bank half of the stuff are family members, cousins or other kindred degenerates.

Some people commence lawsuit for minor disagreement. I was prosecuted for office quarrel initiated by the other party - the one who charged me afterwards.

Some people love to talk about faeces. Some love to tell or hear farting jokes.

Some people don`t know what is multitasking, systematization, organization

and prioritization. I was scrutinized in the state service for being professional and efficient.

Some people consider themselves perfect. Bureaucrats and theologians are first who cross my mind. Hidden behind desk and regulations they are infallible. Paper makes everything straight.

Some people love to emphasize mistakes of others.

Some people love to diminish efforts of others.

Some people see endurance sport only through the prism of breaking professional records. I started long distance running in my twenties to stop smoking, enjoy nature, sightseeing and improve my personal conditioning. I did all four. Some people come and say that I haven`t broke any professional record therefore I can not talk about running nor express happiness with my amateur achievements.

Some people are lazy and spoiled. Worst of them sit around and disturb those who work or indulge in physical activity.

Some people don`t collect faeces their pets excrement during a walk.

Some people don`t collect their own body excrements after defecating and/or vomiting in public.

Some people hold dangerous, bloodlust breeds of dogs intended for fighting or hunting. They even walk them around unleashed or leave yard door unsecured.

Some people call faggots those who act politely or talk scholarly.

Some people throw rocks, bricks or stone blocks on those who are different or think differently.

Some people are solely interested in form. They disregard the content and its meaning.

Some people are looking for typos and when they find one then they triumphantly march around.

Some people pull fragments out of context.

Most people repeat instead of being authentic.

Some people say "you are lying! There are no such people!" or "you are doing all that! You are the only troublemaker!".

Some people believe that membership of certain political, religious or nationalistic group excludes them from any imperfection.

Humans consider themselves to be an intelligent specie. Being aware of all prementioned, and much more, I do not agree with such statement or accept it partially: only those who ascend above mundanity can rightfully consider themselves intelligent.

* * * * *

What is an intelligence? How can we define term"intelligence"? I will make my own definition: an ability to efficiently solve problems.

What about wisdom? I define wisdom as an ability to get through without an intelligence. Sort of backdoor to problem solving.

Intelligence is directly related to the knowledge we have collected during course of our life enabling us to automatically respond when confronted with challenge. Wisdom is ability to adapt, improvise. Our past is what defines us. Future is what gives us hope. Intelligence and wisdom, past and future connect in this present moment.

Artificial Intelligence (AI) is as computational equivalent of a human mind.

Do you know what is "slime mold"?

It is a single-cell fungus micro-organism which has no sexual reproductive capability but transcript itself, feeding on an organic matter, through a process called spores formation. When scientists compared the distribution of a galaxy clusters and galaxies in the Universe they found striking similarity with the ordinary slime mold growth. It looks that basic intelligence is identical regardless of the respective level, being it fungus or Cosmos, final product is the same.

https://www.nasa.gov/feature/goddard/2020/slime-mold-simulations-used-to-map-dark-matter-holding-universe-together

Human brain has 86 billion neurons total, 43 billion in each half of human brain, as discovered by neuroscientist Suzana Herculano-Houzel. There is same number of non-neuron cells of which 20% are endothelial and 80%

glial.

Micron`s V-NAND (232 layer, transfer rate of 2400 MT/s) flash memory chip has 5.3 trillion transistors each containing 3 bits. It is about 16 trillion bits total enabling a huge storage capacity on a 11.5mm x 13.5mm volume of area.

As we can see, electronic technology has overcame human brain with respect to the memory potential. What about thinking ability? Is there a better comparison than one found in game of chess?

Back in 1988. "Deep Thought" chess computer won playing against the grandmaster Bent Larsen. It was subsequently defeated by Gary Kasparov.

"Chess Genius" program in 1994. won against world champion Kasparov but lost in the second round of the tournament against the Viswanathan Anand who had an opportunity to analyse the program`s weaknesses during its earlier match with Kasparov.

In 1996. Kasparov played a six-game match against IBM's Deep Blue. He lost the first game but won overall.

In 1997. an updated version of the "Deep Blue" defeated Kasparov in a tight clash.

In 1998. "Rebel 10" chess program defeated the Viswanathan Anand.

In 2000. "Deep Junior" program played 9 grandmasters resulting in the 50% efficiency.

In 2002. Vladimir Kramnik and "Deep Fritz" competed ending in a draw.

Deep Fritz 14 features a 64-bit engine, and can support up to eight processor cores simultaneously. I wonder what would happen if they had DF14 in 2002.

In 2003. Kasparov vs "Deep Junior" ended in a draw.

In 2004. Ruslan Ponomariov, Veselin Topalov and Sergey Karjakin played against computer Hydra and programs "Fritz 8" and "Deep Junior". They lost. Same thing happened in 2005.

In 2006. Kramnik lost against the "Deep Fritz"...

Although, there were newer encounters between computers and programs on one side and grandmasters on other, we can conclude with certainty that Artificial Intelligence at least leveled a human thinking ability long ago. Now imagine introducing contemporary chipsets like V-NAND in the picture. Or better yet, quantum computing. It is not all about processing power - written algorithm is very important. Best efforts so far are "Fritz", "Junior" and Rybka.

What are advantages of the computer/program chess engines over their human adversaries? They do not get tired, hungry, sleepy or excited - they are calm, emotionless, ready at all times to perform with maximum focus... But they lack wisdom (ability to adapt, improvise).

Psychology separates different kinds of human intelligence: cognitive, creative, emotional, social, etc. I have even found nine-element (9-element) differentiation made by psychologist Gardener in 1983.: Naturalist (nature smart), Musical (sound smart), Logical-mathematical (number/reasoning smart), Existential (life smart), Interpersonal (people smart), Bodily-

kinesthetic (body smart), Linguistic (word smart), Intra-personal (self smart), Spatial (picture smart).

It is a misconception.

There is only one type of intelligence, same as there is only one brain per human, which can be applied more in one than another direction. It is like filling same glass of water with nine (9) different fluids and declaring each situation as a particular glass of water. No, it is the same glass but differently filled.

For example,

some children play with others and develop social intelligence.

Some children calculate and develop mathematical intelligence.

Some children fantasize and develop creative intelligence.

In each case intelligence is unique to start with.

Some children are overly exposed to the religious influence.

They are intellectually ruined for the rest of their life.

* * * * *

Human brain works in five (5) frequency ranges (Gamma, Beta, Alpha, Delta, Theta), significantly distinct to those of television broadcasting and mobile networks which occupy bands measured in MHz and GHz, brain wave frequencies use 0-150 Hz band with brief ripples going up to 200 Hz. Higher oscillations 250–600 Hz occur in epileptic state near brain lesion(s).

Problem could be an electric network (supply grid) frequency that operates nominally at 50-60 Hz. Electric wires are all around us. Does insulation help? Maybe, maybe not. Transmission pylons stretch above our heads - without insulation.

* * * * *

By simple observation of the mediocre behaviour we can notice many characteristics directly opposite to intelligence and wisdom: selfishness, addiction, arguing, violence, greed, vanity, fear, limited vocabulary, semi-literacy, loudness, lack of critical and analytical skills, negative thoughts, etc.

By avoidance of forementioned we make significant step toward our intellectual ascent...

And one day we will proudly say: we were humans but we have evolved since.

Interview with God

Supreme Being is above any classification including gender attribution.

What if you can do an interview with God? I am offering God opportunity for

an exclusive interview which will be included in my book as separate chapter. Why me? Why this book? Why not? I am the one who is requesting an exclusive interview and the one who will postulate right questions. Exactly this book because I am seriously exploring the respected matter.

I mean, forget about movie "Interview with God" type of conversation. When you realize it is a Christian propaganda then everything becomes obvious. The title is misleading since very soon after beginning things take different turn: it is no longer an interview with God but one-way counseling.

First of all, how can you distinguish between God, higher (human or alien) specie and some supernatural entity? Remember Arthur C. Clarke`s saying: "Any sufficiently advanced technology is indistinguishable from magic". Will you accept telekinesis as proof? Like, if you move a chair I will believe that you are God. But poltergeist can do that. It can be also done with advanced technology. As layman, I can think of magnetic force.

Let us try this: if you alter my perception I will believe that you are God. Hypnosis, hallucinogens, brain frequency modulation - there are several known techniques which can affect consciousness. That is not reliable evidence. Even if entire surrounding changes I will not be convinced because modern virtual reality offers overwhelming experience, especially when nerves are stimulated to mimic the content.

"I was looking for the sign" says journalist. Looking! How subjective behaviour. He is looking for something that will fit his expectation. Supposed divine signs are nothing but coincidence. You pass near hundred advertisements, disregard all and when you see the one with specific inscription you instantly relate it to yourself. What is the true sign? That which directly helps you to survive or profit. For example, you walk down the street and you see clouds forming word "stop now". You immediately stop and few seconds later there is an accident ahead which you just avoided by stopping. Even so, I think this is a subconscious reaction, the phenomenon Hinduism describes as Atman. Essentially, everything is connected but it doesn`t have to be of divine origin. Unexplained can suffice.

Miraculous healing is self-recovery. When we strongly believe that something will help us it can but only in less problematic condition. I never heard that people grew limb or became younger. However, it is not proof for existence of God. It is natural phenomenon, autonomous process... And subtract falsifications.

Temporal modification is tricky. If we somehow avoid related paradox, when things change how will that circumstance affect our memory? Shall we remember differently, and be able to discern the temporal modification, or shall we remember in accordance to modification made and stay unaware? Let us imagine that forementioned is the case and that medical examination show no signs of brain damage or neurological disorder. For example, we remember events from our past but reality contradicts our memory. We know we live in the countryside and we can provide specific details. No, we live in an urban district and everything we said is wrong. Yes, this is tricky. I will certainly believe that an entity involved is able of time travel. Yet it can be highly developed God-like specie not necessarily God. The problem with humans is they always explain puzzling things using phrase "God did it". Everything that is hard to understand is God`s work. Well, not inevitably. It is one possible solution out of four (God, Nature, higher specie or simulation), if we talk within universal frame, or out of two if we talk in an ultimate sense (God or Nature).

Approach used in movie "Interview with God" is that journalist formulates mathematical inquiry and receives quick and correct solution which gets his attention. Why? Some humans have incredible memorization ability, others have highly developed calculating skills. It is impressive but far from proof which should make us believe that we are talking to the God.

Burning bush? Magicians can perform much sophisticated tricks than setting something on a fire. Lame attempt to convince me.

Unexpected, recurring meteorological phenomenon conversion, like sunny

day to stormy weather and back multiple times, would definitely indicate mysterious presence. Again not necessarily God since any physical display can be staged, either theatrically or scientifically.

First session, in public park, ends without single real challenge put forward. Twenty-five minutes with God passes in vain. Although, God did say that It* lives outside of Time but moments later It contradicts own statement by saying that Creation took six days. If It lives outside of Time how can Creation take any Time whatsoever? Second session, in theatre, gave journalist enough time to better prepare. Again not a single real challenge has been put forward. We haven`t identified the person claiming to be God. We haven`t detected is he telling the truth yet he turns the course of conversation toward journalist. Third session took place in a hospital. Journalist speaks Italian and the person responds in Italian. People know languages. It is not proof of the God. At the end of third session, journalist leaves room and texts. God`s image he took and sent before turns out to be a soldier who died in Afghanistan twelve years ago. Clever makeup or false info. Room is locked and then unlocked. Person inside could have locked it and then open. Journalist don`t recall how God and he contacted. Memory loss due to stress. Nothing substantial. Finally, God disappears in a flash of light. Trust was not established. My interpretation is that journalist was traumatized with death of the soldier whom he befriended in Afghanistan. Due to stress, he projected lost friend as the God. Delusion or, in best case scenario, journalist communicated with his inner self (subconscious).

* I use pronoun "It" because I believe that Supreme Being is above any classification, gender attribution as well. Movie makers use preferential and discriminatory male Christian standard "He".

Not a single crucial question was posed. Just biblical discussion you can hear at any religious gathering. God`s identity was not even hinted. Most of the time was spent on salvation topic. What about survival? In order to reach the point of salvation you must survive this savage, barbaric world full of gangs, maniacs and fanatics.

What questions ought to be answered to establish trust in the Divinity beyond reasonable doubt? Primarily, person who makes inquiry must be familiar with cosmology and theological rhetoric. Why cosmology? To have scientific knowledge about the Universe origin. Why theological rhetoric? To recognize persuasiveness and eloquence of the religious deceivers. You must be aware that faith is very profitable industry. Vatican has its own bank. We are talking billions of Euros in cash and assets. Taking into account archives relics and treasures and an amount becomes priceless. Self-proclaimed prophets earn millions annually. These people are trained manipulators, spiritual vultures exploiting poor people`s ignorance and grief. The more science progress the less space is left for believers nonsense.

Questions ought to be answered, which I would ask, are: Is this the only Universe? Is it infinite? How many intelligent species exist in this Universe? Is this the only reality? Is there Multiverse? Is there multireality where each individual reality houses its own Multiverse? Is overall existence fractal? Did you create Universe (are you the Creator) or you are consequential phenomenon (Overseer)? Is everything an abstract projection in/of your mind or made as separate construction in an infinite surrounding emptiness? Did creation came out of nothing? Are quarks indeed an essential building blocks of the physical world and are their attributed values precise or approximated according to the related statistical pattern? Is field theory correct? If yes, what underlying field(s) exist and what is an exact purpose of each? What is Time? How particles gain mass and how does gravitation originate? What is driving force responsible for Universe expansion? What happens in the black hole`s singularity? How can I win the national lottery?

If answer reveal priorly unknown and correct information, or at least confirm present (esoteric) knowledge, and is mutually consistent then we can establish trust in the divine identity but not necessary supreme one. Reluctance, confusion or inconsistency clearly points to the misrepresentation.

Logic Transition Theory

Unseen roots of no prior cause.

Everything in the Universe is a logical consequence of the previous relevant factors involved. If we extrapolate all events backwards, using computer simulation or mathematical calculation, galaxies would get closer and closer, matter would compress more and more until entire spacetime clinch into the initial singularity of infinite density and energy. Let us extrapolate one further step: what are the rational premises for the initial singularity?

Two phenomenons that reside solely in the domain of the metaphysics: Nothing and No-Time. Their nature is transcendent, preoriginating creation of the Universe, therefore it is not perspective subject contemplative from the physical standpoint. Nothing and No-Time need no prior causes for existence. What is nothing? Nothing is real. Remember intergalactic vacuum? What is 99.9% of its cubic meter? Nothing. What is time? Time is measure of the Earth`s angular momentum. We have divided Earth`s rotation cycle into the 24 hours and produced time scale. We use movement of our planet to describe time. Nowadays, we use atomic clocks. But before the Big Bang there was no Earth, no planet, no matter, no space, no atoms. We have nothing to compare time with. Nothing to use as a calibrator.

Does that mean that there is no Time? No. It means that we have nothing to measure time against. There is nothing and nothing is happening. Time is factor of the velocity. No velocity = no time. No time equals eternity. Imagine you have a stopwatch with no units noted. How long will you wait until any amount of time passes, even infinitesimally small? Infinity because there is no time to pass. Only when Time started to be realised, at the moment of initial singularity when first event in the Universe happened. Nothing has existed for an eternity and it jumped into the next logical phase: 0 became 1 or, better yet, +1 and -1. We know when it was from now but if we look from the initial singularity moment into the past we can not see the beginning. How can we see anything which has no beginning? It is like looking into the sky - can you see the edge of the Universe? Take best telescopes - do you see the edge of the Universe? Even if you do - that edge is not an edge when you look again due to the expansion of the spacetime. Think of it as the Heisenberg principle on the macroscale: you can not measure exact position

and velocity of the cosmic border at the same moment.

Nothing is deep. Nothing is eternal. You can not see its bottom - you can not see how old it is. Hence, it is eternal in the past direction. We can place initial singularity 13.8 billions years ago observing from now. Observing retrospectively from back then we can not place it anywhere or anytime because we have no previous reference. Nothing was nowhere and never. Being nowhere and never actually it was everywhere and eternal. It is a paradox. That is why I say it is solely the domain of metaphysics: "Unseen roots of no prior cause". On the vector of eternity the moment of initial singularity is undefinable and irrelevant. You can not precisely determine the infinity and eternity. We use symbol "8", in horizontal alignment, to express such quantity. And minus sign in this case.

Hence, Universe needs no creator. Universe could exist by mere logic of phase transition from 0, which lasted for an eternity, to 1 immediatelly splitting into the two opposite particles of matter and anti-matter.

What is nothing?

What are the characterics of nothing? We certainly can not come to the nothing from somewhere simply because there is no somewhere - there is only nothing. Nothing has no matter, no forces. Try to close your eyes hard so that no light enters them, cover your ears tight so that no sound passes, exhale and stop breathing for a moment, forget about your body and relax, stop thinking. That is what nothing looks like. Exactly: nothing. But Nothing has potential. Nothing has ability to make something appear. Particles and antiparticles emerge, annihilate between pair and disappear.

We ask ourselves the wrong questions because we act accordingly to the 2nd thermodinamic law of entropy. In order to find solution we must reverse our thinking. We must reversely engineer the Universe. Same as "how" Universe began instead of "when" it began, we always ask "can something come out of nothing" instead "can nothing come out of something". Yes it can. Particles

and antiparticles cancel each other - something creates nothing. Isn't the backward method logical? If I enter the room then I can certainly get out the same way. If something goes off then it can go on as well. 1 and -1 summed equals 0. Isn't it logical that 0 equals summ of 1 and -1?

As well as there is only three possibilities for Time to exist: 1) it was forever, 2) it started at some point or 3) it is an illusion, Universe could have: 1) existed forever, 2) started at some point or 3) it is an illusion. We live beings feel the Universe is because we are entirely susceptable to its laws. One can not discard his or her feelings. But in order to think like God - we must transcend our thoughts beyond borders of the spacetime and contemplate in the astral sense.

There are only 3 possibilities for Time to exist: first, it existed forever. This sounds interesting, even logical.

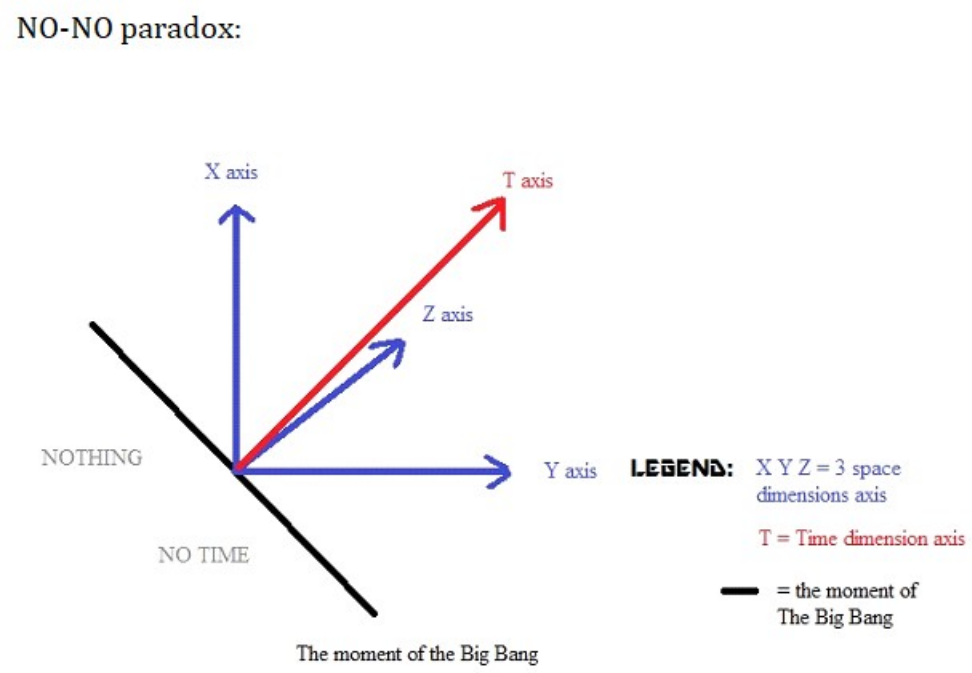
Second, it started at some point. But in what point?

Third, Time does not exist. It is simply man made concept to measure duration of events. Event can be either motion or transformation (including decay, improvement, change) or any combination. Event is not strictly physical. It has duration property. It started at some moment in no-time which can be whenever or never, the first quantum fluctuation in the Universe: 1 or 0, and it will end sometime or it will last to eternity. I recognize periods which are interwoven and create an active fiber of the Time illusion phenomenon that do not really -is- but rather -is virtual-. For example, computer representation do not exist. It is virtual. There are only physical energies or masses and forces that govern them. Accordingly, there is no true reality. There is only visual reality.

Second possibility seems just like the hot Big Bang Friedmann model of the initial Cosmos. At some moment in the higher Time dimension smaller fragment branched. Same problem arise: when did this higher Time dimension began? Identical situation occurs again and again if we try to offer

same solution. We keep extending the circle of the subject. In order to answer the question it is obligatory to observe the question from outside. You do not know for sure how you look without enough light and a mirror to reflect your image.

NO-NO paradox:



If Universe (including Time) started at a certain point, which scientist call Big Bang, what existed before that? Lack of anything material, absence of everything, nothing is easy to grasp. It is easier to ask ourself and contemplate how and when Time alone started to exist rather than how and when space and time together started to exist in the form of the Universe. On the other hand it is much easier to understand lack of space than lack of time due to the visual representation of the matter in contrast to the invisible nature of the Time. I can imagine nothing spatial existing before Big Bang but I can not imagine nothing temporal existing before Time. That is a paradox any way we look at it: if any amount of Time existed before Big Bang

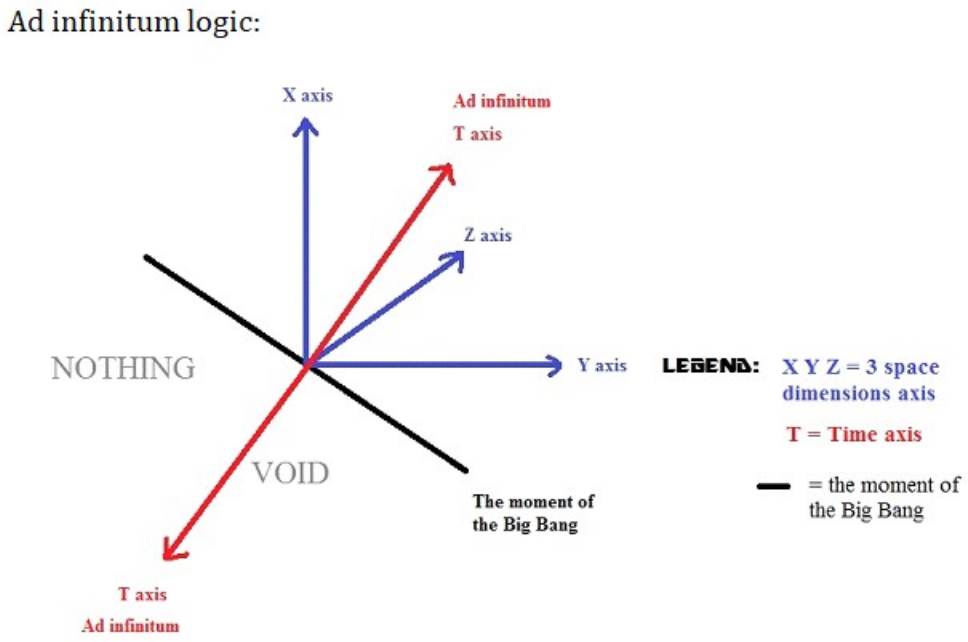
then we can not say that Time started with the Big Bang. But if Time started to exist with the Big Bang then nothing – lasted no time prior? Nothing is so unstable that it lasted for no-time? I have a parallel: when I try to rest my mind while being awake I can hardly suppress thoughts and sustain the phase of not thinking for a longer than few minutes – sooner or later my concentration falls and some thought manages to squeeze out of my neurons and manifest itself... We have nothing spatial which lasted for no-time and then was the Big Bang? Nothing simply wants to become something as faster as it can and now is the best time to do it? Nothing was nothing for no time and then it decided to explode and expand? I have trouble accepting the idea that Time started to exist with the Big Bang. It has no logic – it is a paradox any way around: if any amount of Time existed before then Time didn`t start with the Big Bang. If Time started with the Big Bang then nothing existed for no-time prior? It is Universe or nothing!? This „at the point“ concept is hard for me to appreciate without the instability factor accompanying zilch. Do I see primordial quantum state here: first 0/1 occurence ever? 0 is so unstable that it was 0 for 0 time and immediatelly turned into 1 and expanded further? It actually proposes that quantum instability is fundamental principal of the Nature. Quantum instability or... (inter)change. I must notice similarity with the Yin-Yang philosophy or dual nature of the Universe: Yin turning into Yang and vice versa; 0 and 1 alternating repeatedly. Does it mean that one day 1 will become 0 again? Maybe when it stretches to a maximal degree, maybe not. Maybe only 0 has instability factor included. Maybe 1 is firm. However, „at the point“ theory indicates that Universe, spacetime, started - what a selfish idea.

Humans first claimed that everything rotates around them (Earth). Then they said that everything started with them (the Big Bang). Why should everything started with the Big Bang? Big Bang could have been just one event in the everlasting continuum. I imagine reality before the Big Bang but not our kind of reality, instead hypertime and hyperspace forming hyperreality – time, space and reality without boundaries and limits. I imagine massive Sun, bigger than our galaxy, gigantic black holes and I imagine huge dark energy area creating cosmic thunders – electrical discharges that occasionally hit surrounding emptiness causing big bang to occur on the opposite side of conditional nothing or in the parallel reality. In that case, quantum state is fundamental but only as a consequnce of the randomness of the cosmical electrical discharges, not as a self-induced or field-induced alternation. While conditionality of nothing arises from the fact

that there are forces prior to the Big Bang. Being in the box (Universe) we simply can not see what existed before the moment of the Creation but we selfishly consider it to be the start and the end – and, moreover, having the meaning and the purpose. We should accept the possibility that our Universe is only a consequence of the higher cosmic inccident. Perhapse there are layers of reality.

The most interesting question is: if there was nothing and no-time before the Big Bang then exactly where and when could that Big Bang happened? This is paradox by itself.

Ad infinitum logic:

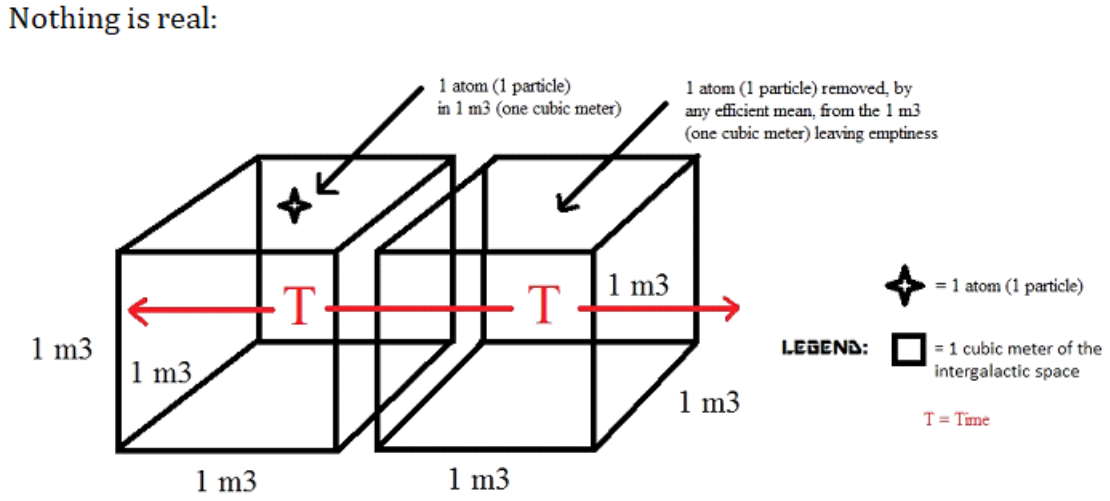


How could nothing lasted for an eternity since there is a point when and where The Big Band happened? Because in order to have eternity you don`t need to have infinite line in both directions – you only need infinity in one

direction which is past in our case. Time line can stretch indefinitely in the past having one side fixed or branched at the moment of the Big Bang.

As well as empty space gives meaning to the cup in the same manner empty space gives meaning to the Universe. Likewise our houses have yards that separate private from public making a barrier. Try living without a yard, road, field or green surface. Try living without an intermediate zone between you and the surroundings. Emptiness in the Universe has actual purpose of the separation.

Nothing is real:



To get the perspective how nothing looks like we can go on a space trip starting from the Earth where air has density of 10`19 particles in the 1 cm3, then cross into the interplanetary space where density is 5 particles in the 1 cm3, further into the interstellar space with 1 particle in the 1 cm3 and finally we arrive in the intergalactic space where density is only 1 particle per one cubic meter. If we, by any efficient mean, remove or neutralize that particle then we have 1 m3 of nothing – nothing with volume of 1 m3 and Time exists regardless of the matter deficiency.

Stages in the density of the Universe (interplanetary/interstellar/intergalactic) offer insight into gradual transition from something to nothing and reverse.

Earth atmosphere Interplanetary Interstellar Intergalactic Density 10`19 5/cm3 1/cm3 1/m3.

Therefore, Time doesn`t need any condition or circumstance to exist.

Of course, things aren`t that simple: intergalactic emptiness, cosmic vacuum, actually is not nothing although it visually appears like that on the first sight. There are electromagnetic radiation, magnetic fields, dust and cosmic rays. Our imagination should go further beyond just removing a single atom. We must neutralize all the prementioned and then we still do not have nothing because there is one remnant left - vacuum or zero-point energy. So, there is plenty of work to make nothing out of nothing but I think you get the picture how nothing looks like.

Can you imagine nothing? No objects, no galaxies, no dust, no cosmic rays, no vacuum energy, no space, no time: no Universe. Absolutely nothing.

Now think, can nothing have any property/ies since it is nothing? What could property/ies of nothing be? If there is any at all?

Does nothing have borders? How can you margine nothing? Therefore, it has infinite volume to begin with. Like limitless canvas to paint on. This immediately implies two instances of nothing: property (volume) and value (infinite).

What about the age of nothing? How old is it? Remember that there is no Time because the Universe hasn`t formed yet. Does "No Time" mean zero (0)

Time? How long will you wait until smallest amount of time pass if there is no time? You will wait for an eternity. Hence, nothing has the age (property) and value (eternal).

Already we have two properties (volume and age) and their two attributed values (infinite and eternal). Distinct metaphysical nothing from the ordinary term which is used in an everyday life for the common purposes such as when saying "nothing happened" or "there is nothing in the box".

What happens next? What happens after Nothing exists for an eternity? Can anything last longer than eternity? It can`t or it was not really an eternity. So, by mere logic, Nothing transforms into the initial singularity or first quantum fluctuation separating Nothing into the two opposites: zero into the plus one and minus one or, numerically, 0 = +1 -1. Here we have very interesting relation with the Zoroastrianism (founder: Zoroaster) and Taoism (founder: Lao Tzu), occuring nearly at the same time (both respective founders lived in the 6th century BCE): while Zoroaster spoke of the cosmic duality, in the form of two opposing forces - the Good (Ahura Mazda) and Evil (Angra Mainyu), Lao Tzu revealed that Tao gave birth to the One which produced two (allegedly named Yin and Yang subsequently). Schuster is credited for the first use of the term "anti-matter" but it seems that Zoroaster and Lao Ttzu were actually the first ones talking about it - not in the exact words although - some 2500 years earlier. Remarkable indeed.

The process repeated, bit by bit, evolving accordingly with the each step in respect to the quantity and diversity. Science named that process inflation and it happened in such a short period of time, 10 -43 second called the Planck Epoch, which was one of the crucial factors needed to stabilize the system or, in other words, to preserve a certain amount of the matter intact and a certain amount partially intact (dark matter). The rest 70% went hello and goodbye!

Do not underestimate importance of nothing. Can you imagine any music composition without occasional pause, rest or silence?

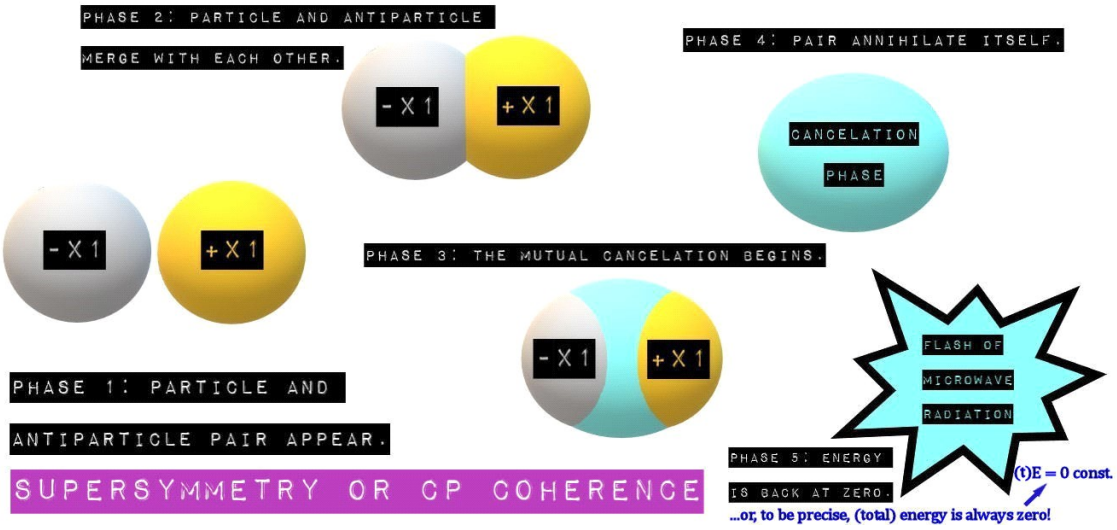
Baryogenesis: formation of the particles

Idea may be right but the method used is certainly wrong.

baryons = particles

+

genesis = formation



How did an opposites pulled through without total havoc taking place? Experimentally confirmed, anti-matter exists in the small quantites observed and can be created artificially. Where is all the rest?

This operations came to my mind by common sense:

introduction of the scalar fields

fields yield particles

diversification (matter and antimatter)

modification (charge expulsion)

coupling / decoupling

shuffling (perturbation)

(re)combination

expansion (separation)

rule of physical laws and forces

Diversified, modified, (de)coupled, shuffled (perturbated), (re)combined, separated by the vastness of the intergalactic vacuum and subdued to the physical forces. Our own anti-matter copy could have been fragmented and distributed between many different galaxies with millions or billions of light years gap between each piece.

Or (relic) black holes could be the reservoirs of an anti-matter? If matter exists above the Higgs field isn`t it logical then for anti-matter to fall beneath since it has the negative mass? Why do sudden energy releases occur along the axis of the rotation? Perhapse an amount of matter was trapped by the black hole`s gravity pull and then thrown back.

Discoveries of the positron (1932.), anti-proton (1955.), anti-neutron (1956.), creating and trapping the antihydrogen atoms (positively charged positron orbiting a negatively charged antiproton) in CERN (2011.), Deep Underground Neutrino Experiment (DUNE), still unconfirmed theoretic predictions and the rest of the efforts made by different laboratories around the world encourage the theory that anti-matter is real and lurking somewhere, probably, in the cosmic depths or it is right here and now, in us and around us, embedded and tamed to serve us instead of destroying us.

Each particle of the matter has a mass and a charge (either positive,

negative or neutral). Antimatter particles look almost like their counterparts: they have the same mass but opposite charge.

In 1928. Paul Dirac integrated quantum mechanics and special relativity into an equation describing movement of electron.

$$(\beta mc2 + c\ 3\Sigma n=1\ \alpha n\ pn)\ \Psi\ (x, t) = i\ \hbar\ d / dt\ \Psi\ (x, t)$$

β - Beta particle (electron)

m - rest mass of an electron

c - speed of light

α - angular acceleration

p - momentum component

Ψ (x, t) - wave function for (x, t)

i - imaginary number

$\hbar$ - reduced Planck`s constant

d/dt Ψ - derivative how wave function changes with time

Solution of this equation has two possible results: positive and negative charge. Based on it, three years later, Dirac predicted existence of antielectron (antimatter), hypothesized by Arthur Schuster in 1898., which was subsequently discovered by Carl Anderson in 1932. and named positron.

What about the neutrino - the most abundant particle in the Universe and fundamental meaning it isn`t made of the smaller pieces? Neutrinos have neutral charge. Does it mean that neutrinos don`t have their antiversion? It seems so but scientists aren`t sure yet. Neutrino is a product of the radioactive decay but it also comes from many other sources like the nuclear fussion and as a result of the super novae (star explosion). Neutrinos are also

incredibly small and light. They have tiny mass traveling near the speed of the light. They are the lightest of all of the subatomic particles that have mass. Their mass is so small that it can not be measured with current technology. They are extremely hard to detect: most neutrinos will pass through the Earth without any interaction! Although Wolgang Pauli first spoke about particle with properties like neutrino Enrico Fermi was the one who first officially used that term. There are three types of the neutrino: Tau, Muon and Electron. The very interesting thing is that neutrinos oscillate between three modes rather than stick to just one. Funny bunch, always smiling and cheering people up! Not like those lurky black holes. Perhapse neutrinos pass through the black hole as well. Can we do the spectrometry of the black hole using the neutrino-based scanner?

There is a hypothesized particle called axion but its characterics (neutral charge, very low mass, weakly interacting with the ordinary matter) look very much like those of the neutrinos.

Theoretically proposed in 1964. by Murray Gell-Mann and George Zweig quarks as nucleus constituents were experimentally confirmed four years later. Why is there six quarks when you need just two for proton and neutron (Up and Down)? Why is there such discrepancy between quark weights? Why is mass expressed with units for energy (eV)? CERN scientists say that they discovered Higgs boson in 2012., colloquially known as "God particle", which decayes into smaller particles. If that is true how come Top Quark (173 GeV/c2) is heavier than Higgs boson (126 GeV/c2)? If it is a fundamental particle why do you see Higgs boson in only 1 out 1,000,000,000 (billion) collisions? Such statistical rarity is called exception not rule and should be referred to as anomaly not pattern. I am not opposing an underlying theory, made by Peter Higgs, but the technique used (crashing particles in collider) and standard model based on its results. If you collide two 1 Euro coins in LHC will you get fundamental building blocks of that coins (cents)? No, you will get pieces of the coins but not fundamental blocks which are cents. What standard model suggests is that by colliding two 1 Euro coins in LHC you create exchange into smaller units. I disagree. You will never get cents using LHC method. You will only get smaller pieces of 1 Euro coins but never smaller units (fundamental blocks). If we use further analogy of cents the thing becomes even more clearer. By colliding two 1 cent coins we will also

get smaller pieces but never fundamental blocks because there aren`t any. Samelike, if we manage to break quarks we will get smaller pieces of the quarks but not fundamental blocks because quarks already are the fundamental blocks. Just not the ones they propose.

What if (anti)protons are fundamental blocks subsequently divided for the purpose of diversification or merely the consequence of primordial annihilation blast? Then quarks are smaller pieces, connected together, but not smaller units as suggested by the standard model of physics.

Are they always crashing particles under the same angle and using same amount of energy? No wonder why they get identical statistical pattern. Try different angles and energies. Maybe then standard values for quarks will differ.

Moreover, by crashing particles you start from the phase when they exist but expect to travel back and see what was before. Therefore, idea may be right but the method used is certainly wrong. Otherwise, time machine has already been invented. It is called Large Hammer Smasher.

If Higgs boson really was the primordial particle which immediately decayed into smaller ones that decay could have been exactly the consequence of annihilation between matter and antimatter while 30% of particles survived, went through baryogenesis process and formed the Universe as we know it.

On contrary, I think that the first matter-antimatter pair created was Deuterium consisting of Proton and Antiproton (Proton and Neutron plus Electron) as related counterparts. Most of it mutually annihilated giving initial push for fission which released neutrons leaving Protium as the most abundant Hydrogen isotope in the Universe. Free neutrons started hitting other particles. Energy from fission raised temperature (pressure) enabling fusion of two Deuteriums and producing Helium-4 the most abundant isotope of Helium in the Universe. In Big Bang nucleosynthesis several types of fusion occured producing certain isotopes such as Tritium, Helium-3, Li-7 and

Be-7. Elements lighter than Iron have been produced in stars, through process called stellar nucleosynthesis, while Supernovae explosions created the heavier rest.

One thing is sure: that first part of Universe creation was extremely chaotic.

Universe

Haul! Haul the ship across vast skies.

From one side to other in a blink of an eye.

Cause there is no voyage like infinity.

Sail to the horizons, brave explorers of new worlds.

Let us all embrace this one common task:

Ours, but ours together, is the Universe to be conquered!

From ancient astronomers of China and India, antiquity, Copernicus, Galilei to Newton and Einstein, human understanding of the Universe has changed. For a long time people believed in a static model but today prevailing theory is *The Big Bang*. It is not an explosion but an expansion of the spacetime as described by the famous Albert Einstein in four dimensions: 3 spatial and 1 temporal. The scientist is still right, indeed his entire postulates of relativity have been retained, many proven, but since then the Higgs boson has been found and we have come to new, intriguing insights into the nature of the reality. Underlying the Cosmos, on miniature, subatomic levels, different laws apply than those to which we are accustomed in everyday life, even in classical science. At the particle level, the laws of quantum physics apply: things are and are not at the same time and information travels instantaneously, without any delay, regardless of the distance.

Age of the Universe is 13.8 billion years with diameter approx. 92-95 billion light years but that is just a visible part of the Cosmos. What is an actual size

– we can only estimate.

Baryonic acoustic oscillations (BAO) are density fluctuations caused by mechanical waves disturbances in pressure of hot plasma during an earliest stage of the Universe development when photons were obstructed in their motion. As plasma sufficiently cooled, some 379,000 years after the Big Bang, protons and electrons formed Hydrogen atoms while photons became able to travel around due to the Universe transparency.

Cosmic background radiation is the microwave glow discovered in 1965. by radio astronomers Arno Penzias and Robert Wilson. Do you remember snowing effect, noisy black and white dots, on the screens of old tv sets? That is it.

Statistical analysis done by scientists at University of Oxford, led by Mihran Vardanyan, combining results of BAO and standard candles type 1A Supernovae measurements, revealed that an actual size of the Universe could be at least 250 times larger than its observable part or at least 7 trillion light-years in diameter.

Accepted cosmological model is Lambda cold dark matter (ΛCDM). Lambda constant, related to dark energy, means that Universe is expanding. Cold refers to slowly moving particles, dark that it is not responding to electromagnetic radiation. This model gives good frame for explaining CMBR, distribution of large-scale structures, observed quantities of Hydrogen, Helium and Lithium, accelerating expansion.

The universe is isotropic, homogeneous and flat. Isotropic means that it is equally distributed in all directions, homogeneous that it is of the same composition wherever we look. This is proven with the Hubble and Planck deep space image of background cosmic radiation but the new James Webb space telescope will certainly capture very interesting scenes as well. We are already enjoying improved photos of space dust from which new stars and distant galaxies are formed under the influence of gravity. Little by little,

Webb will advance our vision of the Cosmos like no telescope before. There are several reasons: we have not yet recorded in that part of the infrared spectrum, the position in the Lagrange 2 point and using a special shield which means that there is no interference with sunlight.

Density of Universe expands in all directions without becoming positively or negatively curved. Ratio of observed and critical density (Ω) is equal to 1. CMB trigonometry reveals no curvature. BAO suggests flatness, inflation theory as well. Problem is that we can only see visible part of the Cosmos: beyond that point - we are practically blind. Another challenge comes in an evidence gathered by group of scientists in 2019. (Melchiorri, di Valentino and Silk) whose findings of higher critical density (six Hydrogen atoms per cubic meter) and data deviation present in PL 2018 observations hint to the possibility of closed Universe. However, flat model still remains the standard.

Field theory is an idea that reality as we know it, matter and energy, arise from an underlying base. As a concept it was invented earlier but first significant step came in the form of Maxwell equations which related electricity and magnetism revealing existence of an electromagnetic waves traveling at the speed of light. Max Planck found that atoms are harmonically oscillating absorbing and emitting energy in miniature amounts called "quanta". Furthermore, Paul Dirac discovered that these quantum harmonic oscillators are always vibrating, have a non-zero lowest energy in a ground state and produce quantum fluctuations in an empty space (vacuum) as well. Terms quantum field (QF) and quantum electrodynamics (QED) emerged.

Inflation is an ultrafast rise from singularity, when density decrease, rescaling due to the suspension of an absolute coldness entrapment, followed by structuralization of the quantum field, having intrinsically associated physical laws, and an annihilation of matter and anti-matter as initiator for fission which in its turn started fusion. Since nothingness possess property of inertia it exhibits resistance to change. To advance fusion, pressure had to be introduced. As first black holes formed, positive outside pressure (dark energy) overcame vacuum defiance and pushed the boundaries toward beyond. Positive inside pressure (gravitation) enabled heavier fusion inside stars. Universe cooled by dissipating heat in order to

restore thermal equilibrium. Our cosmic fate is ultimate dissolution, energy will return to the underlying dark cape which will frozen compress back to singularity. New cycle of existence begins after an ice has melted. Universe could move like jellyfish meaning there is a higher dimensional displacement associated to each individual span.

Steady-state model theory, published by Hermann Bondi, Thomas Gold, and Fred Hoyle in 1948., proposes that density stays unchanged throughout the Universe but can not explain an expansion of the spacetime.

Holographic Universe theory is a very intriguing concept, worth mentioning as one of the possible mechanisms for cosmic emergence. Leonard Susskind, professor at Stanford University, said: "The Universe is a hologram, an image of reality coded on 2d surface". Juan Maldacena, professor at Institute for Advanced Study in Princeton, N.J., explains that our 4d spacetime could be a holographic projection. Using combined AdS/CFT approach he found that this duality could describe the same physical system, despite difference in dimensions and gravity, because both models are scale invariant: by increasing an entanglement of CFT subsystems - topology of AdS spacetime begins to connect. Herein, similarity between holographic and string framework is notable: they both arise from downward. According to holographic principle, reality emerges as a consequence of CFT subsystems entanglement. According to string proposition, reality is acchieved with vibration of one-dimensional objects having D-branes as end points serving to prevent collapse. Eventually, Universe becomes a full geometrical representation of a quantum origin manifesting specific phase transition from laws of subatomic realm to domain belonging to general relativity. Shinsei Ryu and Tadashi Takayanagi came up with conjecture that an area of the surface of a black hole is related to an entropy of a quantum system. Years later, Engelhardt and her colleagues proved that calculations are possible and that Hawking radiation is consistent with laws of quantum mechanics (no loss of information). Regardless of their veracity, e.g. AdS has negative curvature, attempts like these will help us discover theory of quantum gravity.

Due to evident discrepancy between macro and microcosmos, theory of

quantum gravity wants to incorporate laws of general relativity and those of quantum mechanics into a single framework. Loop Quantum Gravity uses network of loops integrated into spin matrices to describe structure of the spacetime continuum.

We can declare that something is limitless because we can`t count each piece but is it actually infinite or we just consider it to be due to our counting inability? Did you ever saw an infinite number? How do you know it exists? Well, it doesn`t exist in any other way than mere speculation, based on the previous statistic pattern, expressed by the symbol ∞. It exists only as a never reached potential. We are always step behind, one moment late, if we chase destiny. Instead of chasing it – ride with it. Once you ride with it you do not have to follow it because it leads you. It is the nature of things to obey cosmic laws. Like train on tracks. If you turn – you fall. If you drive straight – you reach the station.

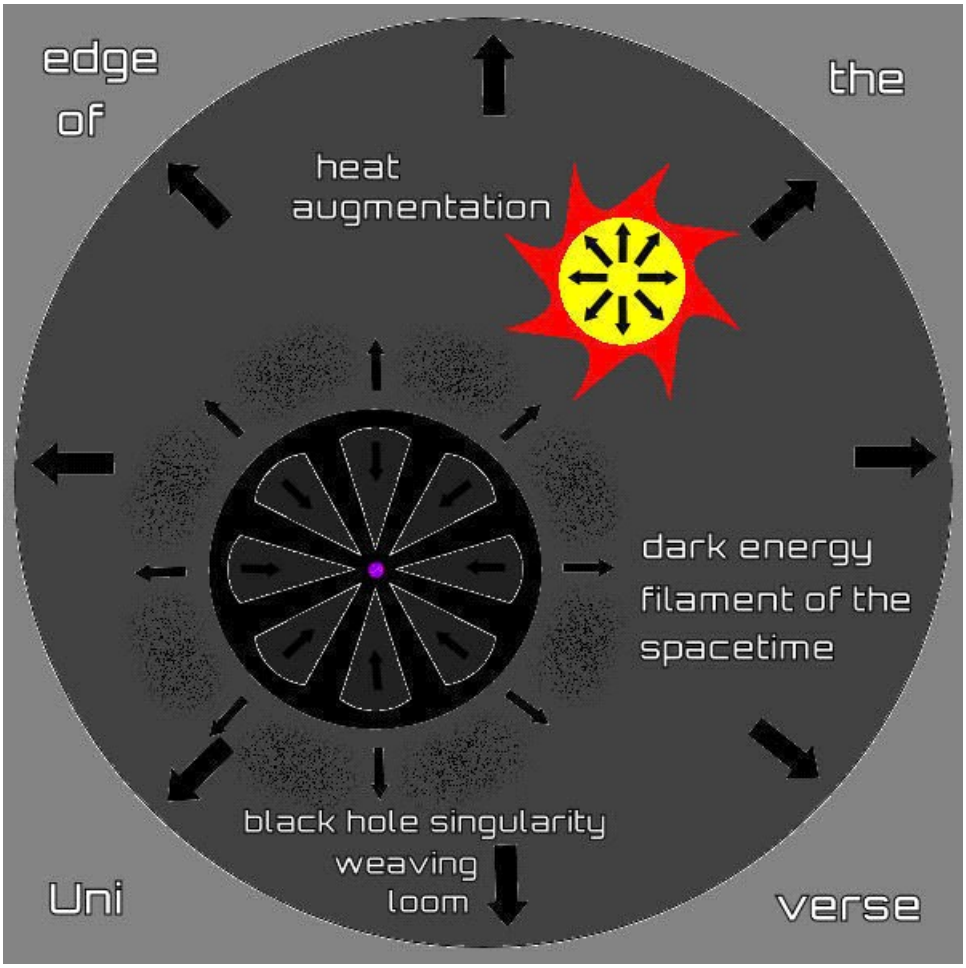
Universe does not have to be limitless to be infinite for us. It is enough to be of unreachable margine or curved back on itself (closed in a feedback loop). That is why I say: Unseen roots of no prior cause.

Following idea sounds crazy but counter intuition can easily be true... Prima facie, spacetime is constantly becoming larger and galaxies more and more distant to each other but, actually, the Universe could be expanding into itself, keeping volume at the size achieved through inflation, while galaxies are getting smaller and smaller thus returning into an initial state of singularity pulled by negative (inward) pressure of the black holes which is perfectly balanced with positive (outward) pressure of the repulsive dark energy, meaning, the Universe is a self-driving mechanism.

Primordial black holes generated inward pressure countered by reverse action of aetherlike substance known as dark energy. Before that, in plasma state there was no pressure and heavier elements couldn`t be formed.

Star burning creates heat which expands the Universe but without integrated

stability mechanism spacetime fabric would tear apart. Black holes work as cosmic weaving looms producing dark energy that is constructive filament responsible for repulsion. These two phenomenons, heat and dark energy, work synergistically as illustrated here:



Most interesting phenomenons in the universe are:

Singularity – point of infinitesimal size having immense, but not infinite, energy and density. We must distinguish an initial singularity from which the Universe emerged, derived by extrapolating galaxies, and later ones located at the center of the black holes - theoretical because we haven't explored

any black hole yet. Simply said, a point of smallest magnitude where all mathematical calculations lose meaning. Basic singularity is the function f(X) = 1 / X in which X = 0.

Inflation – theory devised by scientist Alan Guth describing the period of ultra-rapid development with devaluation of the cosmological constant. It explains many problems like quantum fluctuations transition to the macroscopic scale, why is Universe isotropic and homogeneous as well as why the cosmic microwave background radiation is identically distributed, why temperatures and curvatures in far regions are almost equal (without inflation velocity laws of thermodynamics would be violated, curv. = 0), flatness, horizon (communication) and lack of magnetic monopoles. However, this process would never end without some sort of stopping mechanism. Proposed by Andreas Albrecht and Paul J. Steinhardt, Hubble friction is gravitational effect of an expanding universe ("slow-roll") which explains density fluctuations, that is, rise of galaxies and temperature variances in the cosmic microwave background. Another significant contributor to inflation theory is Andrei Linde who introduced ideas such as cosmological phase transitions, false vacuum and multiverse.

Fields theory - says that underneath material world we can observe and detect lies structure, substrate comprised of one unifying (quantum) or more fields (gravitational, electromagnetic, Higgs) each serving its own purpose. Inactive parts have zero point energy which is the field`s ground state.

Multiverse - idea that reality is structured of many, possibly countless distinct (parallel) Universes.

Multireality - idea that overall existence is structured of many, possibly countless distinct (alternate) realities.

Herein I must mention two types of events reported by some individuals. 1) First is Deja Vu or feeling that particular situation has already occurred. Most likely it is caused by hippocampus disorder, prefrontal/neocortex short circuit

or delay in processing. Popular (mis)conception is glitch in the system implying that we live in a simulation. 2) Second is alternate past recall (Mandela Effect) or memory that things happened in different way than commonly believed. Most probably this is a consequence of short/long term memory problem, having certain neurological origin, or it could just be a matter of brain imperfection since remembering is reconstructive process, susceptible to confabulation, cognitive biases, memory consolidation, false memory syndrome, social dynamics and cultural influences, not exact reproduction such as listening to the music cd. Bold interpretations are convergence of Universes or realities and temporal interference - a junction point where various particulars, parallel Universes, alternate realities or different time lines, meet.

Other dimensions - could have vertical, horizontal or angular displacement. Or they could be reached through zooming in and out of the Universe (reality).

Gravity – still an unexplained physical force different from electromagnetic, strong (between particles) and weak (decay). Some scientists believe in existence of gravitons as mediators of the gravity force.

Neutron star – stellar object almost entirely comprised of neutrons. I roughly calculated that a teaspoon full of neutron star, if we could seize it like that, weighs like Earth`s moon. There are pulsars and magnetars. Pulsars periodically increase an intensity while magnetars exhibit magnetic field due to rotation. Chandrasekhar calculated the limit of 1.4 solar mass needed for a stellar object, after consuming its fuel, to become neutron star.

Black holes – cosmic objects that suck the living marrow out of things and can have mass from 2-3 Suns up to 100 billion solar masses, primordial even more. Some rotate and create the magnetic field. Tolman-Oppenheimer-Volkoff limit of 3 solar masses is needed for a star to collapse and create the black hole. However, some black holes have 2-3 masses of the Sun so I take this TOV limit with a small reserve. There are ordinary black holes formed by a collapsing star and supermassive that are located at the center of almost

every galaxy and act as an anchor holding the galaxy together.

Quasar – is a very luminous active galactic nucleus found in the central region of a galaxy housing supermassive black hole surrounded by swirling matter falling inside and in return emitting large amounts of radiation across entire electromagnetic range.

Dark matter – form of matter counting for about 25% of the Universe (amount of ordinary matter is about 5%). It cannot be detected in the visible part of an electromagnetic spectrum but attracts things, inflicts gravity. My theory is that this form of matter was created during the Cosmic Dark Era and belongs to Bose-Einstein domain meaning it doesn`t obey Pauli exclusion principle. You send photons in and they do not excite neighbouring electrons because these exotic electrons are true social animals, totally used on having close company beside. You need to be much more sophisticated in your approach. Maybe, neutrino based spectrometry can play a role here? Another idea, much more phantastic, is that an alien civilizations camouflaged their habitats with transparency effect.

Dark energy – form of energy that could be remnant of matter-antimatter annihilation, consequence of sollar radiation and overall matter decay, responsible for an (accelerated) expansion of the Universe, repulsion of spacetime, and tightly associated with cosmological constant Lambda, Λ. It is permeable, measurable and invisible.

Under section titled "Temporal transfer" I hint that Time could be dark energy because these two share common characteristics (permeat, can be measured, not visible). I wrote that suggestion years ago but obviously it is important who publishes first. In paper "Black Hole Singularity Resolution in Unimodular Gravity from Unitarity", published 11/3/2025 in the scientific journal Physical Review Letters, scientists from University of Sheffield related black holes, Time and dark energy. I do not claim they have stolen my idea. I have files (articles) from 2024. proving my contribution. I know that people worldwide come to similar or even same ideas because humans have identical brain structure and contemplate identical things. I just want to

emphasize that possibilities of Time and dark energy connection and equivalence crossed my mind years earlier exactly as I wrote it down but not yet published. Regardless of who noticed it first, it is remarkable thought.

https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.134.101501

Gamma Ray Bursts - powerful gamma-ray emissions (radiation in gamma part of an electromagnetic spectrum) occur when a massive star collapses, forming a black hole, or when it explodes as Supernova.

Swift Observatory and Fermi Gamma-ray Space Telescope have jointly detected such an event, brightest ever, designated as GRB 221009A happening about two (2) billion ly from Earth. This particular burst was so intense, carrying enormous energy, that briefly dazzled scientific equipment. Luckily, China's GECAM-C jumped into the picture allowing for measurements to complete.

Unsolved mistery is how photons travel for such an astronomical lenght. One theoretical explanation is that they are converted by magnetic fields into a hypothetical, dark matter particle called axion and reconstitute back after entering a magnetic field again. This theory is supported with findings from NASA space observatory Imaging X-ray Polarimetry Explorer (IXPE) and European Space Agency's (ESA) Integral satellite. Apparently, magnetic sphere directs black hole radiation producing energy jets which create more power in a second than Sun during its entire, ten (10) billion years lifetime.

But what was the cause of this 18 TeV blast that outperformed Large Hadron Collider (LHC) energies ranging from 6.8 to 13.6 TeV? Most probably, merger of two neutron stars resulting in a magnetar birth - large, fast spinning neutron star enforced with strong magnetic field not further transforming into a black hole which happens within milliseconds of time.

In 2024., Large High Altitude Air Shower Observatory (LHAASO) in Daocheng County, China, recorded Gamma signal of Peta scale strenght (1-2.5), described as made in "bubble structure", originating in Cygnus constellation, which functions as cosmic particle accelerator driving energies up to 20 PeV before releasing them into a space.

Neutrinos - massless electron, muon or tau particles, produced in extreme cosmic environments like star outbursts, neutron stars and black holes merge, which are extremely hard to detect due to their infinitesimal weight and evasive skills. Neutrino based spectrometry could help us directly detect dark matter and scan black holes inner structure.

IceCube Neutrino Observatory, built under the South Pole ice crust, and KM3Net (Cubic Kilometre Neutrino Telescope), constructed in Mediterranean Sea, serve the same purpose: detection of Cherenkov radiation, an electromagnetic emission, first observed around submerged nuclear reactor appearing as blue water glow. This mesmerizing spectacle triggers when high energy ray moves through medium faster than its respective light speed limit influencing atoms along the path which in turn release photons.

WIMP - weakly interacting massive particle (wimp). Sensor fields in specialized facilities use either magnetic spectrometer, supercooled crystals, liquified Xenon or Argon gas to detect wimp`s. Alpha Magnetic Spectrometer (AMS), installed on International Space Station (ISS), Cryogenic Dark Matter Search (CDMS), Silicon based, and Coherent Germanium Neutrino Technology (CoGeNT), Germanium based, both located inside Soudan Underground Mine in Minnesota, LUX-ZEPLIN experiment in USA, below the Black Hills in South Dakota, and DEAP-3600 array, inside a nickel mine in Ontario, are best examples of such endeavours.

Gravitational waves - curls in a structure of the spacetime.

While measuring time intervals of radio waves emmited by pulsars, fast rotating neutron stars whose magnetic poles blast out energy, scientists at

North American Nanohertz Observatory for Gravitational Waves (NANOGrav) detected creases in spacetime fabric of such magnitude that can only originate during supermassive black holes merger.

Experimental search for gravity began in 2015. when Laser Interferometer Gravitational-Wave Observatory (LIGO) sensors, already just after few months of starting the work, picked up subtle distortions.

Due to an individual inadequacy of Earth-based telescopes to properly detect spatial warping, largest telescopes in the world are combinedly used together with a galaxy wide sensor array in the form of pulsar fields.

Telescopes operate in an area known as Radio Quite Zone where wireless telecommunication signals are prohibited in order to prevent interference with sophisticated scientific equipment.

When gravitational waves contract or expand spacetime they also speed or slow time periods between pulsar made radio signals.

This inquiry confirms Eintein`s one hundred (100) years old prediction and is supposed to solve "final fraction of a second" question, link dark matter with primordial black holes and even explain nature of the gravity itself.

Precision has continued to be a limiting factor, due to the "quantum noise" - a smallest scale interference, but in recent years scientists have developed new technique called "squeezing". This approach significantly increases observational capacity at higher frequency level at a simultaneous cost of degrading it at lower ones.

Early (primordial) black holes - presence of supermassive black holes, in an early stage of the Universe development, has been detected in galaxies

CEERS 1019, where nine (9) million solar masses giant formed just 570 million years after the Big Bang, UHZ1, where over ten (10) million solar masses behemoth formed 470 million years after the Big Bang, and, most distant ever found, GN-Z11, where two (2) million solar masses heavy object formed 430 million years after the Big Bang, surrounded with pristine Helium alone which explains smaller weight compared to forementioned two.

Discovery was made using deep space survey, with combined Webb infrared and Chandra X-ray efforts, by searching for an unusually shining galactic cores called active galactic nuclei (AGN). CEERS team, led by prof. Finkelstein - an astrophysicist from University of Texas at Austin, detected very fast moving gas which suggests strong gravitational pull originating in the middle of a clump.

These primordial black holes, predating galaxies formation, were created due to a collapse of an enormous particle clouds.

Universe faster expansion - by determining a rate of cosmic spread, called the Hubble constant, scientists estimate an age of the Universe to be 13.8 billion years and predict final possibilities such as never stopping expansion, collapse or rip.

There are two methods of calculating the Hubble constant: 1) Supernovae and pulsating stars (Cepheid variables) distance and movement monitoring, 2) cosmic microwave background radiation analysis. Results differ. First method yielded 73.3 km/sec/Mparsec (Hubble/Gaia) while second (Planck) gave 67.4 km/sec/Mparsec rate of expansion. This discrepancy is called Hubble tension. To resolve it new method has been developed which includes detection of a gravitational waves from colliding neutron stars. Result is right in between known two constant values: 70 km/sec/Mparsec.

New observations made using Webb space telescope indicate that Universe is receding slightly faster than it was previously thought: 74.03 km/sec/Mparsec. Moreover, expansion is accelerating with distance.

Implications of these findings are shocking especially if we look beyond boundaries of the known Universe: constants value would require adjustment and current scientific views will have to modify.

Magnetic field - is an energized area located around moving electrical charge and materials which possess magnetic properties.

Earth`s burned surface on the west coast of both Americas, practically whole Australia and entire region from Northern Africa, across Middle East and to the Mongolia could be the consequence of cosmic rays and anti-matter past intrusions originating as the strong solar flares or even beyond the system. How does the Earth`s core behave? How long will it last keeping our shield working? Mars doesn`t have strong magnetic field nor the moon and look at their life lacking vastelands. Is this our destiny? Surely, if (when) Earth`s magnetic field seize to exist.

Graviton - hypothetical massless spin 2 particle, proposed by Quantum gravity theory, responsible for producing gravitational effect. If applied in sufficient amount creates the most extreme spacetime anomaly known, called "singularity".

Imagine sprinter running 100m in 10 seconds. What if we compress the distance into 50m keeping his speed the same? He will cross it in half time or 5 seconds. After he passes the last meter then we elongate 50m back into an initial lenght of 100m. Do you realize what we have achieved? We have achieved running 100m in 5 seconds. Speed has doubled artifically because the lenght was halfened by manipulation of the spacetime.

Darkino - is a graviton counterpart accountable for stretching of the Universe. Maybe it is a same particle but with different, inverse properties?

This duality would perfectly encircle standard model of particle physics to 32 pieces total just like chess set have: 12 (quarks and anti-quarks) + 12 (leptons and anti-leptons) + 5 gauge or vector bosons (gluon, photon, Z0, W+, W-), 1 scalar boson (Higgs) + 2 hypothesized scalar bosons (graviton, darkino).

Phantomino and nihilino - hypothetical scalar boson particles, metaphysical counterparts of graviton and darkino, responsible for creation and destruction of the Universe.

Newton's laws of motion:

1. Object remains still or is in uniform motion until it is affected with force.

2. Period of momentum corresponds to the force.

3. If two objects mutually act with equal force then that force has the same strength but an opposite direction.

Four laws of thermodynamics are:

0) If two systems are in thermal equilibrium with the third then the two are certainly in mutual thermal equilibrium.

1) The total energy of the isolated system is constant.

2) Heat always flows from a warmer to a cooler place, meaning entropy has only one direction: from warmer to cold, not vice versa.

3) An entropy of the system has a constant value when the system temperature falls to an absolute zero.

In accordance with the 2nd law of thermodynamics, Universe inevitably dissipates its heat by expansion awaited by the fate described with the 3rd

law and the total energy cannot exceed an initial value which is described by the 1st law.

Elasticity is body`s ability to resist distortion and return to its original state after an influence of the distorting force has ended. According to Hooke`s law, lenght of displacement is proportional to the force exerted.

$F = k\,x$

F - exerted force

k - constant (related to material used)

x - lenght of displacement

Using elasticity analogy, I can explain gravitational force as a tendency of vacuum response for returning into an initial state either by compression or expansion depending on distance between objects (getting closer increases attraction while moving away increases repulsion). To understand it, replace constant k with cosmological constant Λ.

Einstein`s laws of relativity

Already known to Willem de Sitter that the velocity of light cannot depend on the velocity of motion of a body emitting it, Albert Einstein in his Special Theory of Relativity (1905.) integrates the principle of relativity and the law of propagation of light. Drawing from previous accomplishments done in fields of electrodynamics and (astro)optics, Einstein tells us that laws of physics equally apply for all inert observers, the speed of light in vacuum is same for all observers regardless of the speed of their motion or the speed of motion of a light source and light properties change according to direction of an object`s motion. Relying on Maxwell`s electromagnetic theory, system of equations named “Lorentz transformations" and Zeeman work regarding the

light beam division into spectral components, which act is caused by magnetic force, Einstein demonstrates how classical mechanics doesn`t hold for non-uniformly moving bodies. Inside system, time is not absolute but relative, dependent on a position and condition of an object which state can be expressed with Lorentz transformation t` = t - v/c2 x / sqr. (1 - v2/c2) practically observed as time delay: moving clocks tick more slowly than fixed. Next, Einstein unifies two conservation laws for energy and mass determining how body of rest mass m also has rest energy m c2 which potential can be used for conversion into other forms. Complete proof valid for closed, static environment was first obtained by Max Laue in 1911. while Felix Klein in 1918. derived solution for closed, time-dependent system. Finally, Einstein recognizes the speed of light in vacuum as the highest possible speed in the Universe.

In General Theory of Relativity (1915. - 17.) Einstein proposes that objects create a gravitational field around them which enables mutual attraction, bending of light rays passing near and time measuring difference (clocks tick slower). To account for Mercury`s and binary pulsars elongated orbit, space can not be described with Euclidean simplicity but using Gaussian curvatures implying that an idea of a straight line becomes meaningless. Rotating gravity sources viciously swirl their environment along. Spacetime arching, and distribution of mass and energy within it, is explained through Einstein's field equations (EFE). Clear evidence for an existence of the gravitational fields, and thus practical confirmation of general relativity postulates, came with detection of the gravitational waves. For Einstein, Universe is finite yet expanding.

If most distant regions are expanding faster than the speed of light how does it affect life and physics in those galaxies?

Do you know what is special about water (H20)? It contains an element that was created at the very beginning of The Big Bang, Hydrogen (H), and Oxygen (O) element that is crucial for creating and sustaining life.

Structural models

State must exist which is not this nor that but an intermediate point, possibly a superposition of both as well as their origin.

Minkowski spacetime is a four-dimensional model (4d), advanced modification of the Galilean and Newtonian classical physics, configuration in which position of the object is determined by the four coordinates, three spatial and one temporal, named x, y, z, t. It is Euclidean plane or Cartesian system transformed into triple spatial geometry with added fourth axis representing the time factor.

In order to project physical environment graphically various diagrams were presented, like the above mentioned, but they are only valid locally. For accurate cosmic depiction enhancement is needed.

Being a flat model, Minkowski diagram follows the Pythagorean theorem which expresses the rudimental link between the three sides of the right triangle using formula a2 + b2 = c2 implicating that the shortest distance between two points in a spacetime is always a straight line, interval invariance having causality as a distinctive property. It is suitable basis for physical systems over finite distances without the gravitation component included.

If we account for the general relativity then we get to a curved rendition yet still an incomplete picture. Introducing Clifford bivector approach, expansion of the scalar/vector field, and Lorentz transformations, six-parameter linear change, we provide a conversion from one inertial frame of reference to the next by enabling rotations (orientation) and boosts (velocity) operations to be performed.

Since dynamics is same in any such frame, Einstein advanced the Lorentz transformations, applying his own principles of physical laws and speed of the light immutability, eliminating the need for an ether.

Integration of the Lagrangian mechanics into the Minkowski diagram enables analysis of particles motion in a selected system as well as dynamics of an entire field yielding a difference between kinetic and potential energy in a form of the Lagrangian function.

$$f(L) = kE - pE$$

Hamiltonian dynamics refined Langrangian proposition by mapping a vector using momentum, instead of velocity, thus inducing linear isomorphism between tangent and cotangent framework. Besides inertial reference frames, having constant speed, there are also non-inertial ones that accelerate.

Clifford’s spacetime algebra extended the Hamiltonian view joining scalars/vectors, complex numbers and quaternions into a single multivector field which allows bivector state to exist simultaneously.

By now we have deep entered the realm of a non-Euclidean geometry. Gauss first introduced the term "non-Euclidean geometry" to define all significant efforts made after an initial attempts for creating the universal framework applicable for entire cosmic surroundings not just regional or closed.

Poincare made further progress adding translation to the symmetry set which, due to the Noether's theorem, necessarily resulted in ten (10) generators being established preserving the spacetime interval and promoting the Hamilton quaternions beyond stationary: 1 for energy (preserved in a closed system), 3 for momentum (constant in a closed system), 3 for angular momentum (conserved in a closed system) and 3 for the middle point of the mass (invariant in a closed system).

Poincaré configuration, named after French mathematician and theoretical

physicist Henri Poincaré, is a crucial concept in a modern physics helping us to understand behavior of systems and particles in a spacetime by portraying the basic forces governing the Universe as well as the related conservation laws.

It consists of:

translation (P)

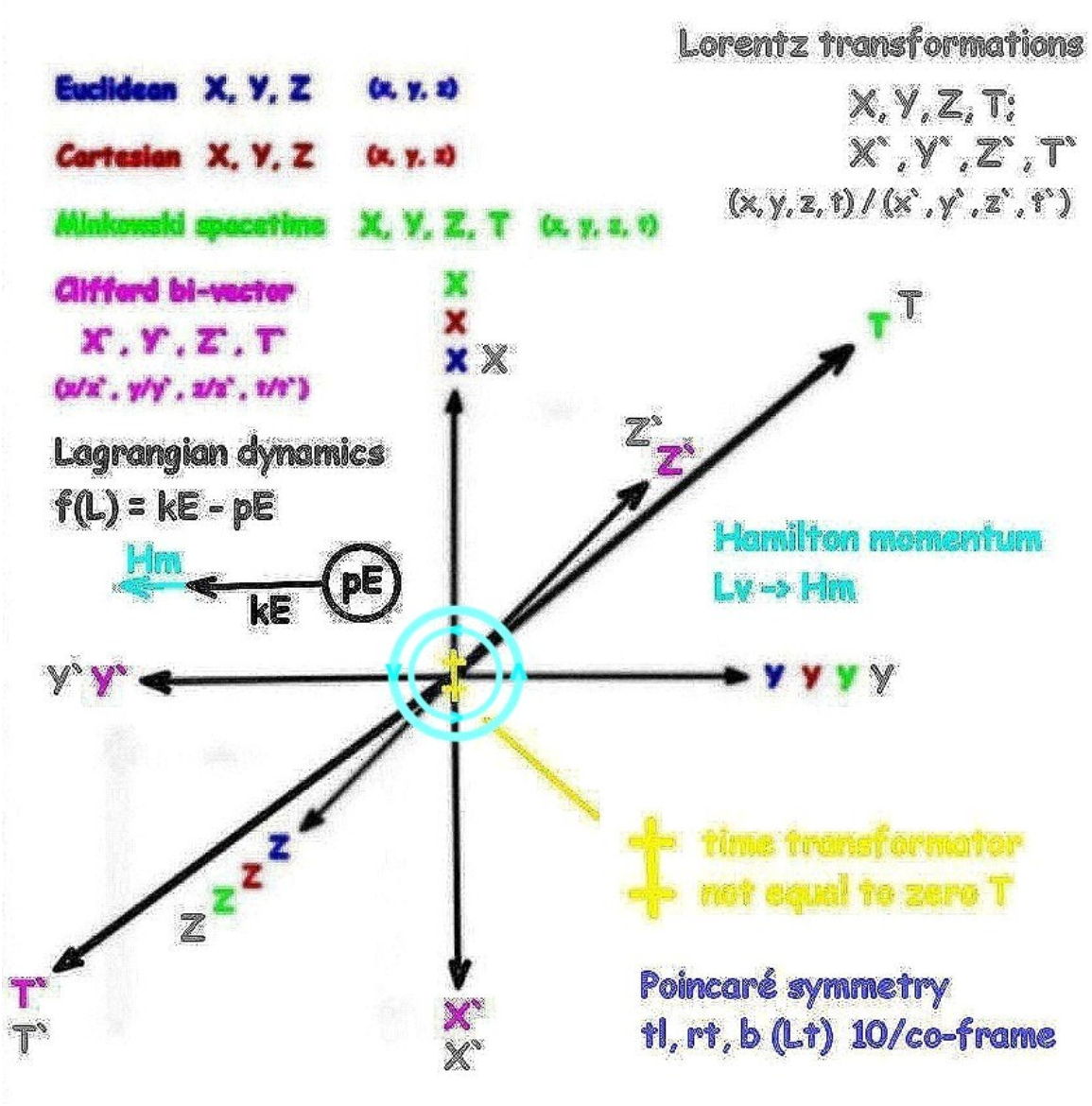
rotation (J)

boost (K)

Translation: change of an object`s position (location) without any influence on its orientation or velocity.

Rotation: change of an object’s orientation (direction) without any influence on its velocity or position.

Boost: change of an object`s velocity (speed) without any influence on its position or orientation.



Poincare system is the most complete spacetime framework ever developed. The most complete yet still not perfect. In order to polish it we need to add the time variable into an equation. It doesn't have zero (0) value because it is not a number but the switch factor, temporal buffer, synchronistic cache, rotadoor, sort of a cosmic exchange office. It is only a potential instantly resonating away chronomorphed. Like heated ice doesn't immediately vapourize and skip the liquid state, past does not turn into the future directly nor present moment is an illusion of the self-being. Time streams through the narrow passage of an existence constantly altering between prior and later, before and after, was and will. Past and future events disclose/unfold like

cards pulled from a fresh deck by the hand of an expert dealer and placed on the table having fine green covering stretched over mahagony wood engraved with gold. They just... Stack. 'n Stick. Tick. Tock. Tick. Tock. What is in-between tick and tock? Now. This moment.

Willem de Sitter developed model of the Universe, called De Sitter spacetime, based on positive cosmological constant, having positive curvature and with positive energy density (opposite is anti De Sitter spacetime).

Are we matter or its emptiness coating? Maybe here as well the sequence is floating, perpetually slipping, intangible and elusive.

Alas, we consider space to be vector like, time of a scalar nature. Meaning, space has both directions and attributed values, while time only has an assigned quantity lacking any specific pointing other than... It goes. It passes, second by second, from and in the direction unknown.

Wait! We are observing spacetime solely from the space perspective using triangulation as a practical method having three coordinates to determine exact position of an object. What if we observe from the time perspective solely? Then physical location becomes irrelevant while time turns into a bivector connecting future and past through a tiny dot called this present moment, jiffy.

Where are we? This question is easy to answer. We are in the Universe, obviously.

But... When are we? Well, this is a lot heavier question than it may appear at a first sight.

What is a future? It is the moment that will happen immediately after now.

What is a past? It is the moment that happened just before the present.

We can not be in the future nor in the past otherwise it wouldn't be referred to as such. We are always in-between.

This circumstance was already noticed by theologian Saint Augustine in 4th century CE. In Confessions, he said that "if future does not yet exist, past no longer exists and present takes no time at all then how can time exist?".

Does present exist? There are just two possibilities - it does or it does not.

If present does not exist (takes no time at all) that means temporal flow is only an illusion. It is how we perceive reality not how reality actually is.

If present does exist (takes some time) then it is ultraslim, infinitesimal, Planck sized quantity separating the future and the past.

State must exist which is not this nor that but the reference point, dividing intermediate serving as clear entropical distinctor. Otherwise, we wouldn`t be able to know what was before and what came after. Times, past and future, would seem interwoven, inexplicably confusing. There would be no chronological order. You could experience birth and death simultaneously. You could be your every self at any moment but then... Who would you really be? Looking to an ocean do you see each individual drop? Looking without seeing is practically same as being blind.

I call it the "Time Transformator".

Watching the horizon, in far distance, what is it actually? Is it an edge of the landscape or the first layer of air above? Or imaginary, illusionary border separating geosphere and atmosphere?

We are like in a narrow middle section of the sand glasshour having only one grain width. Up is one grain higher, down is one grain lower. Therefore, it must exist the state which is not up nor down but an equilibrium intermediate, the reference point. Without it you are either up or down which is paradox because up or down are something which can never be reached: an intangible potential just like the future or the past moment.

Time is side-effect, by-product of an energy transformation or form of an energy itself.

It is never before, now goes away immediately, future never comes because it is always step ahead... Time`s nature could be the constant change. Traveling to past would be returning the system in its previous state, by resonating away, while traveling to future acceleration of the change (fast forward) achieved with progressive vibrance. What we call present moment is transformation of previous into following. By controling the process of transformation we control the destiny. Fate is in our hands!

Or, now is the source of Time, angle of incidence between incoming (past) and reflected (future) where higher dimension splitts into the two, subdivision of more complex substance.

I can think of three analogies: mirror, waterfall and anvil, each having distinct mechanism of action (reflection, perpendicular descend, struck of force). In every case, what is moving towards the reference point is chronologically prior and what is moving away is chronologically posterior. It is just like phase transition. Maybe it is a phase transition because the Time is form of energy. Or medium because it reminds me of the Styx river from Greek

mythology where every action makes you exhausted and you need a lot of effort to move through.

Quantum physics

To describe something you must detect it and capture long enough for observation to complete. Problem with quantum level is that it is too small to be directly perceived. Instead, for the time being, we must rely on statistics and probabilities.

Exactly same thing happened with the micro as with the macro world: people didn't believe in it until they saw it with their own eyes. It wasn't until we made first telescope that we could see the stars. It wasn't until we made the first microscope that we could see a cellular structure. Now people don't believe in quantum physics even though there are particle accelerators. The problem is that we descend to an even lower level than microscopic where we cannot see things and events but we can only detect and calculate probabilities.

Strongest microscopes are transmission electron microscopes (TEM). They can enlarge an object 50 million times (5 x 10`7) but can not observe in 3D technique and they are only good when samples are very thin. Scanning electron microscopes (SEM) magnify up to three million times (3 x 10`6) using 3d technique of scanning by layers so the final image is significantly more detailed. Proton diameter is of 10`-15 scale (0.8 femtometer) while diameter of quarks is even hard to estimate, roughly two thousand times smaller than proton`s. This is the reason why we can not see things on the quantum level.

Term quantum (translated from Latin as "how much") is derived from the word quant(a) which Max Planck, founder of quantum theory, used to describe the smallest possible amount of energy. The quantum of electromagnetic force is a photon. Both electron and photon possess dual particle-wave properties which is proven by an experiment with 2 openings

(double slit experiment).

Quantum mechanics is the field of physics that work with subatomic physical quantities and fundamental phenomena explaining the characteristics and behavior of tiniest components existing in nature. It reveals to us that energy is emitted, transmitted and absorbed in quantum (quanta).

Max Planck determined the infinitesimal quantities of time (10 -43), space (10 -35) and mass (10 -8 kg).

To start explaining the quantum realm we need to know basics of particle physics and nuclear physics. The elementary division of particles is into fermions (quarks: up, down, enchanted, strange, top, bottom; and leptons: electron, muon, tau and 3 neutrino combinations of the same) or building matter and bosons or force mediators (gluon, photon, Z and W boson). Gluon holds quarks together (strong force), photon is the mediator of the electromagnetic force, Z and W are the moderators of the weak interactive force. In addition to the 5 previously mentioned gauge or vector bosons, there is a scalar boson called Higgs which is responsible for the allocation of mass to the particles reacting with its field.

Nuclear reactions can be fissions (breaking) or fusions (joining) atoms. In fission, the neutron hits the nucleus, usually Uranium or Plutonium, and breaks it down into constituent parts, releasing enormous energy. In fusion, two atoms are pressed together and create a new heavier. For example, two hydrogen atoms produce the helium atom. The fusion process keeps the star active and thus defies gravity. It generates much more energy than fission but requires enormous pressure and a temperature of 15,000,000 degrees Celsius which is possible only in star cores or during supernova explosions (for elements heavier than Iron). In a nuclear bomb, the pressure is enlarged with a limited space, which is significantly smaller than the sun's core, and a far higher temperature than in the sun's core, as much as 100-300 million Celsius. Once nuclear fuel is depleted, the star collapses into itself under the influence of gravity and, if the singularity theory is correct, ignores the Pauli exclusivity principle by ultimate compression.

Is there a quantum field? Judging by what we know about entanglement and superposition it seems to exist. Experiments have been conducted showing that entangled pair of photons separated by thousands of kilometers still exhibit mutual connection: information somehow traveled without any delay. Superposition is the state where two or more possibilities exist simultaneously until observed. Schrodinger cat example is not animal friendly therefore I will use another one. Let us imagine closed box with turtle and some clover in it. Until we open the box and observe our turtle could have either eaten or not eaten the clover. Moreover, it could have already digested it. When we look then we know because all possibilities collapse into single one. Similar example is tree falling in the woods without any observer. Did the tree actually fall if no one saw it falling? I must remark that things happen regardless of attention (not) given. Much better examples are found on a subatomic level where our thought really can affect an outcome of experiment due to the fragility related to quantum scale events. Decoherence: an electron acts like a wave until we look at it and when we look at it wave collapses and acts like a particle.

Entanglement: two objects connected or paired into a single system, e.g. two photons or two electrons, retain their shared characteristics very far apart from each other. Laser and special crystal are used to divide particle in two pieces which remain in perfect mutual correlation therefore disrupting principles of locality and causality. Einstein, Podolsky and Rosen proposed the possibility of hidden variables but later work by Bell and Clauser eliminated this possibility.

Superposition: An object can be in a multiple states simultaneously and may show different measurement outcomes for each of these special states.

There is a phenomenon called quantum tunneling that plays an essential role in nuclear fusion and alpha radioactive decay. When particle reaches an obstacle it disappears and appears on the other side. It was as she had dived into a quantum field and bypassed an obstacle by traveling below or outside spacetime. Given that the temperature at the center of a star is too small to overcome the Coulomb barrier the situation can only be explained by the QT

phenomenon.

The Higgs field is a universal energy field that uses its scalar (chargeless, spinless) boson to allocate mass to particles which is called the Higgs effect.

There are three statistics: Fermi-Dirac, Bose-Einstein and Maxwell-Boltzmann. The first applies to particles with integer-and-half spin that respect the Pauli exclusivity principle which means that identical particles cannot have same energy state while other two are valid for particles with integer spin and do not respect PEP which means that they can occupy same energy state or position in the quantum field.

Spin is an intrinsic property of the tiniest particles, quantum mechanical form of angular momentum (rotation). When Helium is cooled down and reaches the Lambda point atoms suddenly turn into quantum vortices. Talking about Helium becoming superfluid it also enters the quantum state: it is and it is not viscous at the same time which is proved by kinetic drag and micron porosity experiments.

Field theory say that there are energy fields interacting with matter through Maxwell's (electromagnetism) and Einstein's field equations (geometry of the spacetime).

Quantum mechanics is already used in microwave ovens, fluorescent bulbs, semiconductors, lasers, MRI (magnetic resonance imaging) and in atomic clocks.

Moreover, it is noticeable in many life phenomena although we have never paid attention to it laconicly attributing all phenomena to the laws of macro-physics. Here is one example: a small worker's salary in parallel is and is not – "it is" because it has certain amount and "it is not" because it has already been spent in advance.

Combining the formulas E = m c2 and E = h v we realize that everything has frequency. Matter oscillates, wobbles on an energy fields.

In 1913. Niels Bohr introduced Rutherford–Bohr model of an atom proposing that electrons move in orbits having angular momentum defined as mvr or nh/2π and that electron can change orbit by emitting or absorbing quanta of energy.

m - mass

v - velocity

r - radius of nth orbit

n - orbit

h - Planck constant

π - Pi

Werner Heisenberg postulated uncertainty principle which states that it is not possible to simultaneously measure the position and speed of a particle at the same time both with the maximum precision.

Thus, Bohr’s defined orbits were replaced with probability ones.

Schrödinger's equation (named after Erwin Schrödinger) formulates wave function of quantum system revealing position and momentum probabilities.

H Ψ = i ℏ d / dt Ψ (short version)

H - Hamiltonian operator (sum of potential and kinetic energy)

Ψ - wave function for (x, t)

i - imaginary number (solution of quadratic equation x2 = -1)

$\hbar$ - reduced Planck`s constant (divided by 2π)

d/dt Ψ - derivative how wave function changes with time

Feynman diagrams are schematics depicting particle interactions on the subatomic level or their decay. Each diagram has an associated mathematical expression. One simple example is electron (e-) and positron (e+) annihilation creating photon (γ) which in turn creates new electron and positron.

e- + e+ -> γ -> e- + e+

Feynman–Stückelberg interpretation presents an antiparticle as moving back in time.

Frank Wilczek discovered asymptotic freedom in strong interaction. Atomic core is connected with the bond that keeps not only protons and neutrons together but also their constituents - quarks. When quarks from different sources come very close to one another they behave loosely.

Quantum computer: compared to a conventional circuit that uses bit(s) stored on transistors, the quantum computer uses qubit(s) stored on a superconductor or in a special crystal where lasers trap ions. Qubit is a bit in superposition, both 0 and 1 at the same time. Considering the power of such devices in the foreseeable future it will be possible to decipher even the strongest available RSA encryptions.

While simple, commutative logic states "1+1=2", quantum logic implies

"0/1+0/1 = 0 1 1 2 or total of 4". What about three-body problem? Unsolvable, they say, because we have to compare three sets of data. Any deviations from initial variables, even belonging to fixed, sustainable system, result in chaotical turmoil. Why don`t you compare changes between sets instead? Go an octave higher to find mutual harmony, solution of the riddle... Triantum, nature of the reality is, unifying symphony of different frequencies originating as movements in the mantle of the wellspring. Obviously, function is transmutable and self-adaptive. In classical sense formulated by Newton and revised by an initiator of Pi, f(x), i, Σ and e, contemporary Leonhard Euler while equations regarding three dimensional environment were derived by Joseph-Louis Lagrange. Accounting for gravitational, centrifugal and Coriolis force, Lagrange points determine exact position where placed object maintains its stationary relativeness. Since Henri Poincaré proposed an infinite number of possible solutions, thousands were obtained by worthy mathematicians all around the world. Nowadays, computer simulations are produced including electromagnetic and special relativity influences. However, general solution still evades the radar.

Time crystal is a new state of matter, in addition to: solid, liquid, gaseous, plasma (gaseous state rich in charged particles or ions and fuzzy electrons, example: aurora, lightning, neon advertisements, welding tools, plasma ball) and Bose-Einstein condensate (supercooled diluted gas e.g. rubidium atoms in which a large number of particles are in the same energy state). It is the crystal that periodically changes its configuration without energy modification.

Synchronicity

Inner dynamics of a system spontaneously induce coherence (apparently, an order emerges by itself).

Waiting for public transport to arrive at station, not once I have accidentally looked at someone from behind. Occasionally, that person turned and looked me straight into my eyes. It could be coincidence since it rarely happens. Maybe it is related to an observation effect noticed in double-slit experiment

manifesting due to the fact that both observer and observed are connected by the same underlying foundation. Or certain people possess deeper perception than others (hypersense).

https://www.jneurosci.org/content/33/25/10483

Psychic staring effect is explored since 1898. without giving convincing results. However, studies done in 2005. and 2013. by Alan J. Pegna and colleagues, published in the Journal of Neuroscience, caught my attention. They involved subjects with cortical blindness (lack of conscious sight due to a bilateral damage of the visual cortex in brain) to whom facial images were shown. Some had faces looking at the subject, some away from the subject. fMRI revealed increased activity in right amygdala, with success rate notably above probable, when faces looking at the subject were presented. This phenomenon has been termed “blindsight" by Weiskrantz in 1974. It occurs during motion detection, target localization and pointing but also upon emotional stimulus (de Gelder 1999.). Conclusively, in absence of awareness alternate brain channels could be used to bypass regular sensory pathways.

Quantum theory predicts correlations which cannot be causally explained, such as quantum entanglement, suggesting field(s) interaction with matter on a subatomic level while C. G. Jung talks about uncausal synchronistic events.

What are "quantum field" and "collective unconsciousness" if not the same thing? Or at least directly connected or co-related.

Synchronicity: "an Acausal Connecting Principle", as described by C. G. Jung, says that natural laws are statistical truths but on the infinitesimal scale predictions become uncertain meaning the causality is no longer valid. I argue that maybe it is just not visible due to our limited insight.

Scientific view of the world, experimental method of an inquiry rules out unique or rare events. What we call "chance", "coincidence" or "magic" could be a causality which has not (yet) been revealed.

Jung reasons that inexplicable is not due to the cause being unknown but due to the fact it can not be known using conventional understanding. Spacetime and causality, classical concepts in physics, hence should be enhanced with a synchronicity in order to get the full picture of reality. Especially when space and time lose their meaning or become relative.

Perceptual psychologist Karl Zener and parapsychologist Joseph Banks Rhine conducted a series of experiments using Zener cards. It is a set of 25 numbered cards each containing a geometrical sign. They are showed to the subjects, separated by a physical obstacle from an experimenter, who then try to guess what symbol is currently presented. Many attempts had low or middle probability value but some of the test subjects showed high above average results. The distance between an experimenter and those subjects was significantly increased, for example they used Durham and Zagreb as test locations, receiving equally positive results.

Huygens was first to notice spontaneous synchronicity between two pendulum clocks. He thought phenomenon arise from transfer of mechanical waves across wooden board which makes connected devices act as one system. Since then it has been recognized as widely existing occurrence with distinguishable phase transitions: walkers on bridge, audience clapping, fireflies harmony, tidal locking, chemical self-organization (crystallization, molecular self-assembly or oscillating reactions).

Lee Smolin suggested that large scale structures of the Universe can be result of self-organization...

Idea how inner dynamics of a system can make it rearrange dates back to ancient philosophers Democritus and Lucretius, atomists, who believed that with enough time order can emerge by itself. Further discussed by René

Descartes and Immanuel Kant, this proposition was later opposed by 2nd law of thermodynamics which states that system cannot spontaneously increase its order.

Maybe it is a two-way street? From chaos to equilibrium and reverse. Examples in everyday life are numerous: things suddenly escalate from a spark while blazing fire eventually burns out. Throw rock in a pond and you will create ripples. Wait shortly and water will calm.

Chaos theory explores predictability of dynamical systems, concentrating its attention on basic framework, pathways, junctions, enhanced iteration, fractality and autocontrol, emphasizing significance of the starting provision. Dominoes and butterfly wings effects are popular examples how little events one by one unfold with time, exponentialize and pile up causing huge consequences of proportions unimaginable earlier, tornadoes. As Lao Tsu said, "the longest journey starts with the first step".

Hence, seemingly acausal synchronicity could be explained by means of chaos theory. You just have to look deep enough and connect all the pieces.

What is Time?

Now is where past and future meet. Tiny overlapping which results in the present moment that never actually passes.

Time phenomenon is the most interesting issue I can think of since it is one of the reality fundamentals, one of the very essentials of the Nature. Without Time nothing is possible. With Time... Everything is possible. All goes and it did. Yet... Does Time exist or is it just an illusion?

There is General Time (GT) - straight line from the point of initial singularity

to an edge of the Universe but not following the geometry of spacetime. This value also represents an age of the Universe and can be referred to as standard. Then there are local times (loT) valid only in particular areas, like vicinity and interior of heavy objects, where spacetime curves causing deviation from the standard. Third type are individual durations associated with particular events such as transformation, moving or decay.

If Universe stop expanding General Time will continue to exist but it will further rely solely on individual durations until all cools to an absolute zero when everything, including Time, gets frozen. If Universe start contracting General Time will not count backwards. It will go on until everything returns into initial singularity when everything, including Time, loses meaning.

Arrow of Time is direction in which time flows. In what direction do you imagine time flows? Left to right, right to left or...?

Western coordinate system reveals an answer: values ascend from left side to the right. Also, look at Western analogue clock where numbers are distributed from left to right. It seems like time flows from left to right. Why?

Because in Western world people have adopted "left to right" writing pattern. Accordingly, their perception of time direction is equivalent: from left to right. Our minds are customised in such manner. We have selected specific writing pattern and attributed it to the time flow direction also. Very practical but it doesn`t mean that it is correct just because we have selected it. We could have selected otherwise.

Chinese and Hebrews are using "right to left" writing pattern. There are languages or dialects using "up to down" or "down to up" writing pattern. Every script composition has its respective writing pattern but it doesn`t mean they correlate the time flow accordingly. For practical purpose, left to right is adopted as norm worldwide.

Modern clocks are digital: adding time unit on the top of an existing bundle but also reseting every 24 hours, regardless of the system used: 12 AM / PM or 24.

Humans have inner clock (circadian rhythm) reseting every 24 hours.

Moon resets every 33 years. It is called the lunar solar cycle.

Solar cycle, Schwabe cycle, is a period of eleven (11) years when Sun resets switching its magnetic poles and completing the Hale round, double Schwabe, after the switch has been returned to an original position. 10 1 10 1. Do I see a binary code in nature of the reality?

Do I see an error correction instructions on the cosmic level?

Universe is a big watch with every part being smaller watch. The system is monitored and balanced not only from up to down but also in reverse. Head is looking at tail and tail tickles face creating perfect equilibrium, an ultimate harmony, the divine unison.

Nothing lasted forever but couldn`t last any longer and phase transitioned into an initial singularity. It was when Time started to flow taking away from an eternity until forever returning back to nothingness without any interest rate at all.

The clock is not counting from left to right, from up to down or reverse. An arrow of time has no specific direction. By having no specific direction it flows in every possible direction. It is just counting and re-counting. When this Universe dissolves becoming Nothing again the cosmic clock will reset and start counting again.

The Time spills in itself and back out driven by the constant energy transformation. Hence, energy is the key... Defined by current entropy status.

Entropy is a degree of disorder in the system. Law of thermodynamics say it irreversibly follows an arrow of time: the more time passes the bigger is an entropy.

What is now (present moment) if not current universal entropy status immediately changing into sequential configuration thus creating an illusion of the time flow? Like series of images that listed in a succession perform seemingly uninterrupted progression.

If we change an entropy of isolated system will we change an arrow of time as well?

Space is of vector nature having three metrical dimensions, time is of scalar nature having only one temporal dimension. Meaning, space has value and direction. We can point to any place specifically and precisely. Time has value but lacks direction yet it permeates things.

Of course, because we look from the space perspective.

Imagine looking from the Time perspective. Then scalar turns into (bi)vector, (tri)vector into scalar.

Master the time. Really, master the time. Become faster and more efficient in what you do. Human brain has ability to elongate time during crisis. Then our mind double fires! Why don`t we train ourselves to regularly double fire and then quadruple during the crisis?

Because we neglect our mind on daily basis. People use their brain less and less with each passing day. Forget remote control, we are even developing artificial intelligence to think instead of us.

What is the result?

We will not remember the time anymore.

When we forget time... We forget who we are and what are our responsibilities as the most intelligent specie on Earth. We must protect not destroy Gaia!

For a long time people have tied the basic temporal unit, second, with Earth`s rotation. Before that, for thousands of years, astronomy (movement of the celestial bodies) was used as a template.

Then humanity switched to Cesium atomic clock defining one second as a time needed for the Cesium-133 atom doing exactly 9,192,631,770 oscillations not gaining nor losing a second in more than 100 million years (NIST-F1 Cesium Fountain Atomic Clock).

Nowadays, there are even more precise atomic clocks such as "Ytterbium Lattice Clock (YbLC)".

We measure Time using frequency.

Thus, time is an illusion of the flow, consequence of an energy transformation, frequency at which reality resonates, inextricably tied to underlying base.

Initial singularity wavelenght was or near zero (0), having absolute density and absolute frequency. With expansion of the Universe wavelenght increased while frequency decreased. An end of the spacetime is where wavelenght becomes straight line (infinite) and frequency zero (0) or near it.

Time is an oscillation of matter and energy, a radioactive decay of the particles.

We can learn to shape Time as we learned to shape clay.

Time paradoxes

Can we leave before we come?

To clarify at the start: I approach every issue objectively and let an evidence lead me to the truth not the other way around.

I am aware that my, human, brain is not evolved enough to sense the time dimension as we sense the physical dimensions. Besides, there are certainly knowledges and technologies far beyond our current understanding.

Temporal functionality requires threefold structure: past, present and future state where now (this moment) accommodates overall system`s change as being infinitesimal transition point between prior and posterior.

Hypothetically, if somehow the Time travel could be achieved an important question are related paradoxes.

People posed this paradox in a different forms but with the same problem: if you go back in time, visit the past and arrange that your parents never met and conceived you then you will, as a consequence, immediately seize to exist? You will promptly vanish into an obscurity like you never was?

Time could be flexible branching as a tree.

You will continue to exist in your separate time branch.

You will never be conceived in the present.

Every time travel creates new stream.

The result are parallel worlds co-existing simultaneously in a different Time branches.

That is how I imagine the Time: as a tree. There is a main part, General Time, out of which numerous fragments divide and subdivide on their own but are always connected to the substance.

Everything is tied.

Let us move a step further in the Time travel paradox.

Someone else could come, maybe you from another reality, and stop the arrangement being done after it was done. Will that make you appear again like you never disappeared? In this present Time branch, third, yes. In the former, second, you are gone. In the first you exist.

Perhapse, you could be your father? Or your mother in case you are female. Or both if you clone yourself and change sex... Meaning, you alone could be all three: you could be your father and your mother and their offspring. Imagine this triangle: you are your parents and their child. You alone arranged your conception by traveling through the Time. You alone are the origin of yourself.

Is it really possible to create yourself, by using the Time travel phenomenon, out of nothing? But... since when do we consider Time to be nothing?

This paradox is called the temporal knot, also known as an infinite loop. Take a gift which you have received from someone, travel back in the past and give it to the same person who will then later give it to you. We get perfect circle (A to B to A to B, etc...) seemingly without beginning. Where is an origin of the gift? Is there an origin? Yes, there is but we have to look outside of the loop. Obviously that gift had to be initially created or it wouldn`t exist. Once we create an infinite loop beginning becomes obscured, unobservable from within the system. From outside of the system loop looks like this: X to A to B to A to B, etc... To roll a wheel you must exert force. Once a wheel start to roll you can let go. Now, wheel is turning around apparently by itself.

There is an excellent Netflix tv serie called the Dark.

Now imagine an ultimate time travel paradox: by using the high energy lasers, in the future, people have created the Big Bang - in the past. We ourselves, humans, could be the Origin of this Universe.

There is an interpretation how Universe can level any paradox. It simply accommodates arising issues by using built-in error correcting codes.

Paradox-free interpretation, suggested by physicists at University of

Queensland, proposes that whatever we do the Universe will straighten any anomaly. Similar concept already existed in the form of Igor Novikov`s Self-Consistency Principle.

Beside creation of a separate temporal branch, I have thought of second plausible solution in case there is no chronological diversity: annihilation could be a process corresponding to the time travelers age - not immediate response to cause removal. Meaning, if you somehow go back in the past and stop your parents from conceiving you then you will not seize to be right that moment. Embryo will never be conceived and with each passing moment yourself will bygone equivalently. You will never get obliviated because of removing the cause of your existence. Your past will start disappearing together with your memories. You will continue to live but continuously forgetting everything you experienced and learned until preventing your birth to occur from which moment on only new formed memories will occupy your brain cells. Traces of your existence will steadily vanish and eventually no one will remember who you are. Not even yourself.

Of course, simplest solution is an instant extinction but I am always trying to look beyond straightforward models.

Can we leave before we come? Yes but only if we do not stay.

Time travel

Altering energy levels we influence Time. By modulating frequency we can choose our destination, either in past or future, in this or some other Universe.

Science say the Time and frequency are inversely proportional.

$f = 1 / T$

$T = 1 / f$

Are really the Time and frequency inversely proportional?

Or...

$f = 1 / pT$

$pT = 1 / f$

f - how many waves will pass a given point in a second

pT - period of Time

For example, if waves of something pass 5 times through a given point in a second we say the frequency of that something is 5 Hz.

Using formula $pT = 1 / f$ we get 0.2 sec result for the Time period.

Therefore, period of Time is an inversely proportional to a frequency. Not Time itself. Time is sum of all related periods.

$T = pT1 + pT2 ... + pTn$

Max Planck formulated an equation relating energy (E) and frequency (f):

$E = h \times f$

h - Planck`s constant

f - frequency

Let us join two equations and relate Time with energy.

$E = h \times 1 / T$ ... x T (multiply both sides with T)

$E \times T = h$ ... /E (divide both sides with E)

$T = h / E$

$h = 6.62607015 \times 10{-}34$ Js (Joule second)

or

$4.135667696 \times 10^{-15}$ eV/Hz

Time is counteracted by an energy level - increasing an energy we lower the Time! It is like a playground seesaw: when energy is maximized time is minuscule, almost insignificant for photon traveling at the speed of light. Inversely, when moving object slows down it starts experiencing time more closely. When its speed reaches zero time becomes extremely elongated.

Without an energy there is no Time.

By increasing an energy we lower the Time!

How do we increase an energy level? Well, the faster an object moves the greater kinetic energy it possess.

Ek = 1/2 m x v`2

Notice that the kinetic energy increases with the speed squared, meaning an object with a double speed has four times bigger kinetic energy. Meaning, the speed is more significant contributor than mass.

Remember formula T = h / E from earlier?

Now we replace E with expression 1/2 m x v`2 and get:

T = h / 1/2 m x v`2 or T = 2h / m x v`2

When we reach the critical velocity, resulting in maximal energy level sustainable by associated field, being it quantum or whatever, Time will drop to zero (0) value. For us, Time will stop. For the rest of the Universe, Time will continue at usual pace. Longer or faster we move at the critical velocity more we travel into the future. But even small increase in speed produces time delay although practically unnoticeable one and the system, to which we belong, promptly stabilizes itself. To profit from the relativity we must astronomically distance ourselves.

To travel into the past we have to invert an energy into its negative counterpart either by modulating frequency or by using an anti-matter as a fuel source. Anti-matter gives anti-energy.

Time is a consequence of an energy transformation.

We use specific amount of energy to define one second (1 sec). We say that 0.000038 eV or 6.09×10`-24 J is one second (1 sec).

E = h x f = 6.62607015 ×10`-34 kg m2 / s x 9,192,631,770 Hz = 6 x 10`-24 kg m2 / s2 (Nm or J) = 6 x 10`-24 x 6.242 x 10`18 eV = 37.5 x 10`-6 eV = 3.75 x 10`-5 eV = 0.0000375 eV = 6.09 × 10`-24 J

We just use another terminology for an energy transformation - we call it Time.

To conclude, high energy physics is the most promising solution for the Time Travel.

Time relativity

Early bird was caught by the wormhole.

Muons, products of cosmic rays and atmosphere particles collision, reach the Earth because they travel near the speed of light which causes their inner clocks to slow down. Meaning, Time is indeed relative, depending on the speed of a motion which directly influences amount of kinetic energy related object has.

Muon analogy says that galaxies moving faster than ours should experience time flow slower than we do. That circumstance gives them incredible advantage over us. Observer`s position is inextricably related to the relativity phenomenon. Looking from the side General Time passes equally for all but each of us senses time flow proportionally to their movement speed. An outside observer sees astronaut falling into a black hole and immediately vanishing because light can not travel outside an event horizon.

For astronaut time is dilated, due to his increased velocity of motion under influence of gravity, and he experiences the fall much longer. Ultimately, black hole shreds poor fellow into bits and compress. All matter and energy zipped into a single spatial unit heavily violating the Pauli exclusion principle due to immense pressure applied.

Galaxies moving faster than the speed of light are not affected by a time flow. Instead, they could be continuously traveling into the future. Ancient beings living there could be old as the Universe itself but haven`t aged a bit since. These cosmic Elders are able to change history because they know what will happen before it does.

In 1971. astronomer Tom Bolton decided to determine the mass of, what was thought to be, a neutron star Cygnus X-1 belonging to the binary system, where two cosmic objects rotate each other, some 8.000 ly away from Earth.

The result was stunning.

Mass of the Cygnus X-1 was much above scientific predictions: approx. ten (10) solar masses. How could that be?

Well, it wasn`t a neutron star. It was... The black hole. First discovered.

According to Einstein, very strong gravity slows down time same as moving at the very fast speed.

Astronauts on the International Space Station travel approx. 28.160 km/h, in orbit around Earth, and experience time delay, as results of the NASA twins study, involving Scott and Mark Kelly, have clearly shown, because an effects of gravity are countered with high moving velocity. Scott, who was aboard the ISS, had extended but degraded telomeres. Extension was direct

consequence of a time dilation while degradation was most probably the consequence of negative cosmic radiation.

Experiments carried out by Hafele-Keating in 1971., University of Maryland in 1975.-76. and National Physical Laboratory in 1996. demonstrated validity of Einstein`s predictions regarding the relativity of time.

The faster you move the slower Time flows.

At 27km long LHC, under Geneva, scientists are colliding particles creating high energies which tear fabric of spacetime creating "wormholes". By using lasers "wormholes" can be stabilized after which, theoretically, an application of the negative energy, discovered by Dutch physicist Casimir in 1948., can make them traversable. Casimir force becomes predominant at distances below a micrometre (μm). At 10 nm it produces pressure equivalent to 1 atm (one atmosphere).

Hubble observed the Doppler effect in a distant galaxies. By measuring the redshift he discovered that some galaxies are moving away and some move closer to each other. Furthermore, Hubble discovered that the Universe is expanding.

Supernova (standard candles) research revealed that the Universe expansion is accelerating.

Early bird was caught by the wormhole.

Temporal transfer

Time could be a form of energy, maybe even dark energy itself.

Temporal transfer, colloquially known as time travel, is a scientific procedure used to move from one point in chronological order to another, before or after starting position.

In his theory of special relativity, A. Einstein discovered very interesting phenomenon called time dilation meaning that moving clocks tick slower than stationary ones. In theory of general relativity, he predicted that clocks placed closer to the gravitational source will tick slower compared to a distant ones. Both predictions has been experimentally confirmed using GPS satellites: difference is observable but small. During 24 hours period, clocks on satellites tick 0,000007 seconds (7 microseconds) slower than ground ones but actual time dilation is 0.000038 seconds (38 microseconds) in favour of ground clocks. Enough to disrupt delicate positioning and communication systems, which requires regular synchronization, but insufficient for noticeable time travel effect. However, using much stronger gravitational pull, like found in the vicinity of a black holes, time travel to future is possible - as seen in the movie Interstellar.

Let us briefly dwell into the physics envisioned by Kip Thorne: main actor flies with spaceship "Endurance" to fictional supermassive black hole named Gargantua, having a 100 million solar masses and rotating at 99.8% speed of the light. I argue that it is not the black hole itself which rotates but rather its accretion disc. Anyway, Gargantua`s enormous gravitational pull makes surrounding objects to accelerate at 55% of C (planet) and 1/3 of C (spaceship) while maintaining stable orbits. This effect results in time moving slower for protagonists, compared to the time passage on Earth, which consequently makes them travel to the future.

Another type of experiment, that proves theory of relativity, relies on very precise atomic clocks in which Strontium atoms are trapped inside lattice structure produced by laser beams. Scientists measure frequency change between higher and lower levels of entrapment just millimeter apart from each other. Regardless of miniature redshift value, on 10`-19 scale, results confirm Einstein`s prediction. Improved experimental models will enable us to observe waves superposition and explore quantum coherence states.

What are the properties of Time?

It permeates and affects everything just like dark energy which makes me think that Time is also a form of energy, maybe even dark energy itself. These two share common characteristics of being permeable, invisible and measureable. At University of Alaska, professor Kletetschka proposes that Time has three dimensions.

Locally, under gravitational influence and present acceleration, Time has relativistic nature. Generally, from a moment of the Big Bang to the current cosmic border, it has universal value corresponding to an age of the Universe or approx. 13.8 billion years (multiplied with actual size some propose to be 250x bigger).

Day and night are human made concepts - Sun shines all the time.

Humans could be the Universe creator, and destroyer, themselves. Sometime in the future, when science sufficiently advances, mankind will be able to break spacetime fabric apart, using grand unification energy, possibly gaving birth to the Big Bang in the past and maybe sealing their own fate as well.

Time dilation is achievable by increasing any form of energy not only kinetic. For example, vicinity of nuclear reactors could cause temporal desynchronization.

Maybe, Time is not passing, instead, we are passing through Time.

GT standard pace is n events per 1 second. Faster speed slows time flow enabling travel to the future maybe by adding more events (n+) per 1

second.

Few useful advices for temporal voyagers: 1) When you time travel take care not to arrive in a wrong place. What is laboratory in your time could be volcano in the targeted. 2) Do not mention to common folks, nor by any means try to explain, what you did. Even talking to a scientist in the past is counterproductive. They will accuse you of being insane, heretical and deprive you of your personal liberty. You will end up locked, either in prison or sanatory, maybe executed. Also, changing of a historical events could negatively influence the timeline. Temporal transfer will not be invented and you will disappear or get permanently stuck in the targeted time. Or, temporal transfer will be invented prematurely, before your time, and those who acquired respected technology will intentionally sabotage your later efforts.

Who guarantees that chronological warfare isn`t already ongoing? Important events in human history could have been manipulated by time agents, members of special forces sent through the time to introduce, alter or prevent specific occurrence(s).

Light

Light enables us to see but without darkness we couldn`t tell the difference.

Human eyes formed as to constantly render the Universe. Black middle resembles the primordial hot plasma stage, when photons couldn`t yet freely travel around, while colourful surroundings, Iris, portray the blooming.

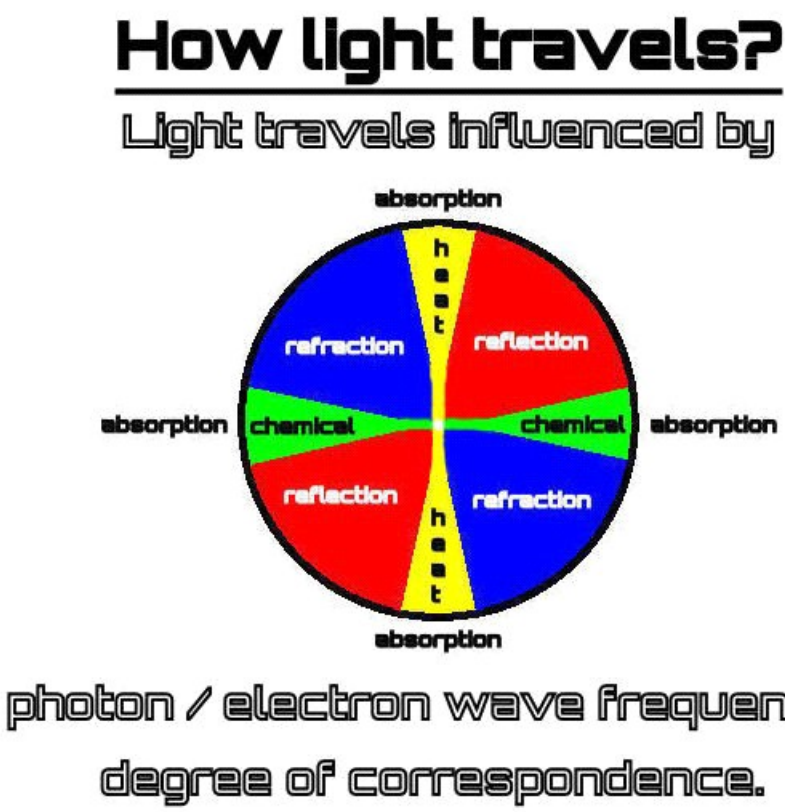
Being part of an electromagnetic spectrum, light is the most important sense humans use to gather informations from their environment. Without it, or with restricted eyesight ability, species adapted other means of perception -

those in deep seas or underground, where there is little or none sunlight, evolved larger eyes, improved feelings of sound / smell / taste, body hair transformed into the receptors, fattened skin and intensified reception of an ambient vibrations.

What is light and how it travels?

When I browsed "how photon (or light) travels" I constantly received this reply: "because of the low air density". I haven`t asked that.

How photon (or light) travels? Because of the frequency coherence between a photon and an electron: if their waves correspond then photon passes through the medium (material) more or less refracting depending on the level of the synchronicity, angle of arrival and due to an electron orbital transition caused by related excitation. If frequencies do not match then photon gets reflected of the surface of the medium (material) which depends on the level of decoherence. Third possibility is an absorption: thermodynamical transformation of the light quanta in black or dense objects or chemical integration (Chlorophyll in the green plants).



Why are leafs green? Because chlorophylls are absorpting red and blue light spectrum while reflecting green part. They absorb the light through the process called photosynthesis which is actually a merging of red and blue waves into the chemical compounds (carbohydrate molecules). It allows plants to use 1% of an incoming sunlight.

The light is just a visible part of an EM spectrum and the smallest one which means that humans can only see tiny bit of the whole picture.

Heinrich Rudolf Hertz first proved existence of an electromagnetic waves theoretically postulated by James Clerk Maxwell in his equations of electromagnetism.

There is a religious misconception that the Light was created by God for

humans to see. No, we developed eyes, ability to see, in the course of an evolution, to use already existing light.

Electromagnetic radiation is created during nuclear reactions, either of stellar or artificial origin.

Related terminology:

Photometry - is measurement of light regarding brightness perceived in human eye or luminous flux (distinct from radiant flux). Device used for this kind of measuring is called photometer.

Lumen (lm) - is the SI unit of a luminous flux.

Illuminance is total luminous flux per surface of an area.

SI unit is lux (lx) equalling to one lumen (1 lm) per square meter (m2).

1 lx = 1 lm/m2

Illuminance intensity is luminous flux per unit of a solid angle. It is expressed by SI unit Candela (cd).

1 cd = 1 lm / 1 sr

To understand Steradian let us remember what is Radian (rad). Radian is an angle of a triangle, drawn from the center of a circle, having arc lenght

(opposing side) same as radius. 360 degrees equals 2pi radians.

Steradian (sr) is a 3d analogue of radian but instead of triangle in circle we draw right circular cone from the center of a sphere (apex). Ratio of projected area surface and sphere's radius square equals respected angular value.

Solid angle (symbol: Ω) is field of view measure.

$\Omega = A / r2$

A - area surface

r - radius of sphere

In case of plane cone base we use spherical cap area surface or $2\pi rh$.

$\Omega = 2\pi rh / r2 = 2\pi h / r$

Visible range of an electromagnetic spectrum is between approx. 400 and 700 nm, divided into following colours:

Red: 665 nm

Orange: 630 nm

Yellow: 600 nm

Green: 550 nm

Blue: 470 nm

Indigo: 425 nm

Violet: 400 nm

Scientists from Caltech University captured light using camera with 10 trillion fps recording speed. In 50 picoseconds (5 x 10 -11 sec) light, looking as blue and white energy cloud *, traveled the lenght of 1 mm. Normally, we wouldn't have time to blink before photons go very far away (30 thousand km) but at this amount of frames we can observe them, in unprecedented detail, literally crawling through the video. Recently, same scientists developed 70 trillion fps camera called compressed ultrafast spectral photography which can record molecular decay. One quadrillion fps is currently set as their ultimate goal. What I do not understand is that calculating we get 15 times difference between speed of light in their experiment (1mm / 50ps = 20 M m/s) and speed of light in vacuum (~300 M m/s). They used milk as medium which partially explains my dilemma due to refractive index of milk (1.34) compared to vacuum (1) or air (~1.0003). Earlier in same experiment they recorded light, at 100 billion fps, traveling lenght of a milk bottle for 2.000 ps. They don`t provide proportions just say it is a milk bottle. Comparing the bottle with scientist`s hand, I estimate the bottle is 15 cm long and thus we get 75 M m/s result (15 cm / 2.000 ps = 75 M m/s). Again, huge discrepancy compared to standard C velocity (4x). I can`t exactly understand what causes variance but I notice consistency between larger fps rate and reduced speed. At 100 billion fps, C appears to be 75 M m/s which is 4 times less than standard C. At 10 trillion fps, C appears to be 20 M m/s which is 15 times less than standard C. As fps progress, C gets apparently reduced. It is certainly consequence of the frame number: the more frames the slower C appears to be.

* I need to clarify one thing: we do not actually see light, never. If we look directly at a light source, being it Sun or flashlight, our eyes will be immediately overwhelmed. We can only look at scattered light or, most often, reflected from surrounding surfaces yet during hot summer days we even have trouble looking at reflected light. Meaning, blue and white colour in video is the consequence of selected medium - milk. It is not how light really looks like. Fundamentally: it is probably transparent. Accumulated: white. Between two extremes, it illuminates not paints.

Amount of image(s) human eye can consciously perceive in one second ranges from 1 to 60. Cinematic standards are 25-30. What we see is not what we think we see. That is why films are called motion pictures. We think we see continuous recording but cameras take multiple pictures (frames) which fast played give impression of fluidity. When there is not enough frames our mind fills blank with motion blur.

Shutter speed (quantity of light per single exposure) must be twice the frame rate in order to capture realistic movement. Rotating disc enables shutter angle to be adjusted (0 to 180 degrees) keeping the speed constant.

Modern video games use 120 fps for higher details and slow motion effect.

Exposure is determined with three factors: aperture (size of lens opening), shutter speed and ISO (lens sensitivity).

Speed of light C

In 1676. Ole Roemer was first to determine the speed of light. Observing eclipses of Jupiter's moon Io he noticed time difference relative to orbital positions of Jupiter and Earth. When orbits are closest to each other interval between successive eclipses is shortest (11 minutes earlier than average) and vice versa (11 minutes later than average). Roemer concluded that light required 22 minutes to cross diameter of the Earth’s orbit and calculated the speed of light by dividing diameter of the Earth’s orbit with time difference. He got result of approx. 230.000 km/s. Problem is that Roemer, due to technical deficiency, didn`t have precise value for time difference, which is 16.7 not 22 minutes, nor he knew an exact diameter of Earth`s orbit. With correct values we get accurate result. Regardless, Roemer was first to find this method and, together with Christiaan Huygens, first to calculate the speed of light, although imprecise.

18th century astronomer James Bradley discovered method called aberration: celestial objects display an apparent displacement due to the Earth`s motion. Using angle of displacement and Earth`s motion velocity Bradley calculated the speed of light to be 295.000 km/s. Same as Roemer and Huygens, he didn`t have precise values but came very close to exact result. This approach was not all original because similar method, called parallax, was known since ancient Greece and was used by Bradley as starting point for his observations.

Hippolyte Fizeau and Léon Foucault devised method of measuring the speed of light by letting it travel to a mirror at the known distance and back. Again, result was rough. Foucault improved Fizeau`s method by replacing cogwheel with another mirror and got impressive result of 299.796 km/s. Impressive because his result just slightly differs from today`s precise one: 299.792,458 km/s.

James Clerk Maxwell proposed that light is an electromagnetic wave and that the speed of light can be calculated using properties of an electromagnetic field.

$c = 1 / \sqrt{(\mu_0 \times \varepsilon_0)}$ = approx. 299.792 km/s

μ_0 - permeability of free space (amount of magnetic flux in vacuum)

ε_0 - permittivity of free space (amount of electric flux in vacuum)

Nowadays, using laser interferometry we can precisely measure the speed of light. Before laser invention radio waves were used or optical interferometer like Michelson`s.

In 1983. the International Committee for Weights and Measures redefined the

meter as "distance light travels in a vacuum for 1/299.792.458 of the second”. The speed of light was defined as exactly 299.792.458 meters per second in a vacuum. Remember that second was defined in 1967. as 9.192.631.770 oscillations during transition between two hyperfine energy levels of the Caesium-133 atom in ground state.

Black holes

There is a supermassive black hole in the center of our galaxy.

As explained by Oppenheimer and Snyder in their 1939. paper about collapse of a dust cloud, titled "On Continued Gravitational Contraction", in absence of an internal pressure and due to energy exhaustion gravity starts to compress matter. Several effects can be observed: time dilation, redshift and light deflection. Finally, only "thing" that remains is a gravitational field so strong not even massless particles traveling at the speed of light can escape its deadly clutch.

In 1958. David Finkelstein described "an unidirectional membrane". Initially calling it “gravitationally completely collapsed object", John Archibald Wheeler switched to the term black hole as suggested by unknown member of an audience during one of Wheeler`s lectures back in 1967.

Year after Alfred Einstein released his famous field equations in 1915., Karl Schwarzschild calculated the solution for a non-rotating ideal sphere. Results went insane reaching the central point where spacetime curvature and matter density become infinite. This tiny dot called singularity was known to mathematicians, such as Cauchy, Riemann and Poincare, earlier and even before as James Clerk Maxwell in 1873. defined characteristics of a singularity: instability, system correspondence, particularity, irreversibility, non-objectivity, randomness, complexity and interactivity but its existence in reality was unimaginable until Penrose and Hawking released their singularity theorems. Even Einstein claimed that Schwarzschild singularities aren`t actually possible.

Stephen Hawking said that diverging (expanding) Universe must have been converged in the beginning, likewise, it must had singularity although it differs from black hole`s one mainly because quantum gravity is assimetrical with time progress. Furthermore, Hawking proposes that special sort of thermal radiation enables black holes to eventually evaporate.

Since event horizon is an edge of the black hole, does quantum tunelling play a role in thermal radiation?

Expressed by Bekenstein–Hawking formula, according to the 2nd law of thermodynamics, black holes also have entropy and it is proportional to the surface size of its event horizon. Almost all cosmic entropy is inside black holes.

Despite opinion shared by many scientists that perfect physical symmetry is needed for collapsing matter to form a black hole, with singularity in its middle, and that natural imperfections would prevent the process 2020. Nobel award laureateas Roger Penrose, Reinhard Genzel and Andrea Ghez proved otherwise. Alongside Penrose`s remarkable theoretical work, started more than a half century earlier, the latter two actually discovered supermassive dense body in center of the Milky Way galaxy. They called it Sagittarius A*.

Sir Roger Penrose, mathematical physicist, Cambridge PhD and emeritus professor at Oxford, found that black hole formation is a robust prediction of Albert Einstein`s General theory of relativity. Trapped surface, topological anomaly converging on both sides, reveals how locally positive energy always produces singularity in such area. Penrose proved that matter doesn`t irregularly swirl around but settles in the middle. As a consequence of expansion, last scattering surface is a transition point when photons finally decoupled and started to travel around making Universe transparent. Talking about hyperbolic geometry, Penrose makes reference to M. C. Escher art in attempt to describe how different positions in and around black hole affect

an observers notion of self and immediate surroundings.

Penrose proposes Conformal Cyclical Cosmology (CCC) or sequence of mutually connected cosmic cycles, named Eons, described by Friedmann–Lemaître–Robertson–Walker spacetime metric and preserving angles in-between. Some things like massless particles and gravitational waves can pass through an Eon barrier, which is the Big Bang itself (re-occurring), producing an observable signal in a form of temperature variances. Vahe Gurzadyan found exactly this temperature variances in Microwave Anisotropy Probe, corresponding to later Planck CMBR data, at least three concentric rings of it revealing anisotropy and inhomogeneity which have been, as explained by Penrose, supermassive black holes clusters in previous Eon.

There are three types of black holes: supermassive, stellar and non-rotating.

Supermassive black holes are remnants of ancient stars that had enormous proportions and consequently gave birth to surrounding galaxies by ejecting parts of their coronal mass. Primordial black holes belong to special category that has more than 100 billion sollar mass and originate directly from an initial hot plasma state.

Stellar black holes are leftovers of stars which burned their fuel and collapsed inwards.

Non-rotating black holes lack strong magnetic field. They could have a bundle of matter in the middle or someone has extracted the singularity. What if collapsed stars haven`t burned their fuel but it was removed by technologically advanced specie leaving us with an empty basket? Dirty thieves, they took the singularity as well! Basket is not only empty but punctured as well. Is there a civilization in our vicinity that has already achieved higher degree on the Cardashev scale exploiting black holes as the sources of tremendous energy?

Spinning black holes must have an axis of their rotation. I assume that periodical two-sided outbursts of energy, named "jets of particles", occur exactly along them maybe due to a critical power accumulation inside the singularity. Does each black hole has a limit depending on its initial size (mass) or matter and anti-matter mutually annihilate in the middle?

To become black hole after exhaustion star must be inside Tolman-Oppenheimer-Volkoff limit: 2.2 to 2.9 solar masses. If it fits the Chandrasekhar limit of about 1.4 solar mass white dwarf (degenerate stellar terminus) will instead become neutron star. I have calculated that a teaspoon of it roughly weights as Earth`s moon meaning it is approx. of 10`22 scale. Be careful when putting sugar in your coffee not to accidentally grab some neutron star or your hand will be forcefully elongated in a chewing gum manner.

Schwarzschild radius, formulated as rS = 2 x G x m / c2, determines the border of an uncharged, non-rotating, perfectly spherical object, event horizon or perimeter beyond which nothing can escape black hole`s gravitational force. For charged ones solution came soon, 1916 - 1921., in the form of Reissner–Nordström metric while it was not until 1963. and 1965. when (un)charged rotating analogous were obtained by Kerr and Kerr–Newman, respectively.

Spinning black holes are slightly distorted, a bit stretched along an axis of rotation, thus they require incorporation of an angular momentum value.

Black holes are extremely cold. Don`t forget to wear a winter clothes if you visit one! Their temperature is near an absolute zero because all energy and matter is concentrated in an ultra dense and hot center point (singularity).

Building on the previous work done by Yakov Zeldovich, Alexei Starobinsky and Jacob Bekenstein, Stephen Hawking in 1974. proposed that black holes emit thermal energy, reduce their mass with time and eventually evaporate.

Contemporary estimate is that our galaxy Milky Way contains about a hundred million black holes.

These are five (5) most relevant black holes:

Cygnus X-1 (first discovered): located some 2.2 kiloparsecs from the Earth (about 7.200 light years), it has 21 solar mass and rotates creating strong magnetic field and X-rays flux.

Gaia BH1 (nearest stellar black hole): located between 1,500 and 1,600 light-years from the Earth, it has 10 sollar mass.

Sagittarius A* (nearest supermassive black hole): located in the center of our Milky Way galaxy, in the constellation Sagittarius, approx. 26,000 ly away from the Earth. It has 4.3 million solar mass and diameter of 23.5 million kilometers.

TON 618 (heaviest black hole known): it has 66 billion solar mass and diameter of 390 billion km, approx.

Phoenix A (currently best candidate for new heaviest black hole known and even primordial one): estimated at 100 billion solar mass and having diameter of 590 billion kilometers.

Observations made by NASA’s Chandra X-ray Observatory telescope and related calculations using outflow method, developed by Ruth Daly from Penn State University, confirmed in 2023. that Sagittarius A* is rotating and producing Lense-Thirring effect, a.k.a. frame dragging, one of phenomenons predicted by Albert Einstein’s Theory of General relativity. According to the latter, massive rotating cosmic objects not only bend but also distort and pull

spacetime around which fact has crucial influence on surrounding accretion disk (diffuse material circling a black hole).

Energy, force and particle-wave duality

Energy is the cosmic vitality which can be transformed or utilised for work.

To break the myth on a very start: energy is not created only converted for the time being. If it could be created that would be groundbreaking success in physics enabling us to harvest free power. Therefore, I find terms "generator", "generate", "create", "produce" and similar not suitable for accurately describing transformation processes. However, I will use them for practical purpose.

Forms of energy are potential (chemical, positional), nuclear, electromagnetic (radiant), kinetic, ionizational, chromodynamical, mechanical, rest and dark. Kinetic, or energy of motion, can be: translational, rotational, vibrational, thermal and acoustic.

Gravitational energy is a form of potential energy an object has due to its position in the gravitational field.

Elastic energy is a potential positional energy an object has because of deformation.

Ionizational energy is energy needed to remove an electron from its host environment.

Chromodynamical or gluon energy is binding energy of quarks.

Rest energy is an energy particle has due to its rest mass.

Dark energy is still unexplained form of energy. It could be the consequence of black holes and stars radiation.

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Particles at rest possess chemical (potential) energy which can be transformed into other forms of energy. Such reactions that release heat are called exothermic but there are also endothermic reactions in which heat is absorbed (transformed into chemical potential).

Examples of exothermic reactions: nuclear fission and fusion, combustion, acid neutralization, cellular respiration, ionic formation, quicklime reaction and thermite reaction.

Examples of endothermic reactions: photosynthesis, evaporation, melting, thermal decomposition.

Exergonic and endergonic reactions are processes which release or absorb energy, not just heat, while exothermic and endothermic refer only to a heat transfer.

Gibbs free energy, formulated in 1873. by Josiah Willard Gibbs as "available energy", is a state function defining thermodynamical potential of the system or total energy ("the greatest amount of mechanical work") that can be used in a thermodynamical system at the constant temperature and pressure.

$G = H - T S$

H is enthalpy of the system

T is the system`s temperature

S is entropy of the system

Devised by Hermann von Helmholtz in 1882., Helmholtz free energy (symbol: A) is thermodynamical potential of the system or total energy (work) that can be used in a thermodynamical system at the constant temperature and volume.

A = iE - T S

SI unit for both Gibbs and Helmholtz free energy is Joule.

One Joule equals force of one Newton applied over lenght of one meter (1 J = 1 N/m or 1 kg m2 / s2).

Change (Δ) of Gibbs free energy reveals direction of the system`s chemical reactions and phase transitions.

ΔG = ΔH - Δ T S

If ΔG = 0 then the system is in equilibrium

If ΔG > 0 then the process is non-spontaneous and endergonic

If ΔG < 0 then the process is spontaneous and exergonic

Same principle applies for Helmholtz free energy.

Enthalpy is the sum of internal energy and pressure and volume product of the system.

$H = iE + p\,V$

H is enthalpy of the system

iE is internal energy of the system

P is pressure of the system

V is volume of the system

Entropy is an amount of disorder or randomness in a system.

$S = k \log W$

k is Boltzmann constant

W is a number of possible microstates in the system

Chemical energy resides in bonds between atoms, nucleus and subatomic particles as well as in electrons configuration. More energy is needed to make bonds then to break them.

Material having chemical energy is called fuel.

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Nuclear energy can be natural, occurring in stars, or artificial, produced in nuclear power plants where reactions, either fission or fusion, create extreme heat which causes surrounding water to boil and steam moves turbine producing electrical power.

Inside nuclear fission reactor, fuel rods made of Uranium-235 are submerged in water to enable neutron absorption by slowing them down. Same water also acts as a reactor coolant but its main purpose is to move turbines and thus create electricity.

n0 + 235U --> 236U --> 92Kr + 141Ba + 3 n0 + 200 MeV

Other results are also possible. For example,

n0 + 235U --> 144Xe + 90Sr + 2 n0 +200 MeV

Since nuclear fusion has many advantages over fission like reduced radioactivity, less nuclear waste and higher energy output, International Fusion Energy Project is working on a tokamak fusion reactor which will use Deuterium and Tritium as the fuel. Hydrogen gas in toroidal chamber is ionized with electrical current and resulting plasma contained by magnetic fields. Walls surrounding reactor are made of Lithium which captures neutrons unaffected by containment due to their electrical neutrality. It is worth to mention that plasma, being electrically charged, generates own magnetic field. When temperature reaches 150 million degrees °C fusion becomes enabled. In dust clouds, 15 million degrees °C is enough to produce a protostar owing to pressure caused by gravity and even quantum tunneling. Our Sun core temperature is just about that. If there is available material in surrounding nebula star will continue to grow until Iron starts to configure and absorb energy which will be released in the Supernova explosion burning at billion degrees Celsius. Blue stars, hottest type in the Universe, can reach 100 million degrees °C. Such extreme heat is needed for strong force to overcome electrostatic force, in other words, to pass atomic stability barrier defined by Coulomb's inverse-square law formulated as F = k

q1q2 / r2 where k is Coulomb`s constant, q1 and q2 are charge values and r is a distance between them.

2H + 3H --> 4He + n0 + 17.6 MeV of which 14.1 MeV becomes kinetic energy of the neutron released.

* * * * *

Electromagnetism is a widespread phenomenon mostly forming as stellar radiation, ranging from radio to gamma part of spectrum, or change in magnetic fields but also produced by artifical means like windmills, hydroelectric power plants or nuclear facilities and intrinsic to materials such as permanent magnets. Three forementioned share common concept of turbine utilization getting an electrical return from kinetic energy input made by wind, water or steam factor.

History of electromagnetism pretty much begins with Hans Christian Ørsted who, influenced with earlier studies done by Galvani and Volta, first observed that a compass needle deflects in vicinity of an electric current which he explained by new, competing magnetic field formed as a result of electric current flow. André-Marie Ampère devised theory of electromagnetism, he referred to as electrodynamics, after discovering that two conducting wires, parallel to each other, mutually attract or repulse dependent on whether electric currents in those wires have same or opposite direction and that mutual attraction or repulsion is proportional to wires lenght and related currents (Ampère's force law). Ampère also found that magnetic field created by an electric current is proportional to the current magnitude. Moreover, this proportionality is equal to the magnetic permeability of free space constant (μo).

Einstein-de Haas effect experimentally confirmed Ampère`s theory showing that by reversing electrons alignment in ferromagnets, through utilization of an external magnetic field, mechanical angular momentum can be achieved. This was extension of William Crooke`s revelation how radiometer vanes

rotate being exposed to light or mere heat. Seemingly due to the pressure of light as Crooke thought, dark sides went back and light sides moved forward. Further experiments done by Arthur Schuster and Pyotr Lebedev, respectively, excluded pressure of light as reason for vanes movement because vanes were motionless in a vacuum while in a case of partial vacuum they should move in opposite direction since photons would exert more force on the reflecting side (light) than on absorbing one (black). Accepted explanation is given by Osborne Reynolds who proposed that temperature difference causes thermal diffusion and thus Crooke`s radiometer functions as a heat engine where difference in temperature becomes converted into a mechanical drive. Technology developed by NASA in 70`s proved that pressure of light (solar radiation) can indeed produce an effect but significantly wide and thin sails must be used in order to receive enough momentum from incoming photons.

Michael Faraday developed first generator in 1831. Usually called Faraday disc, wheel or dynamo it converts kinetic (energy of motion) to electric energy. Faraday discovered that an electromotive force (emf) manifests over the conductor as a result of change in magnetic flux (ΦB) and perpendicular to it. According to his law of an electromagnetic induction, emf equals - d ΦB / d t where negative sign is due to Lenz`s law which defines reverse direction of magnetic field and mechanical force exerted by induced current produced as a result of a change in an initial magnetic field. Faraday`s invention has certain flaws such as use of static field and direct current, low voltage outcome and counterflow. Although latter can be corrected with an array of magnets, this approach was not further exploited but replaced with commutators and alternators. Nikola Tesla patented an improved commutator version, named "Dynamo Electric Machine", constructed of iron disks of various diameters which increased efficiency is achieved by reducing power loss occurring due to the Foucault`s currents.

Essentially speaking, when magnet or conductor are moved against each other an electromotive force is manifested and electric current starts to flow through the connected wire (coil). Reverse conversion is also possible: it is done by an electric motor.

Technically, we are using an angular momentum of the rotor, placed inside a magnetic field, to produce Lorentz force formulated as F = q (E + v B) where q stands for particle`s charge, v for particle`s velocity, E for an electric field and B for magnetic field strenght.

James Clerk Maxwell's differential equations are staple in theory of electromagnetism providing mathematical frame for earlier Faraday`s experimental work. It was Maxwell who first explained light as propagating electromagnetic wave and predicted EM radiation which was later confirmed by Heinrich Hertz (radio), Wilhelm Röntgen (X-rays) and Ernest Rutherford (gamma) while infrared part was already known to William Herschel in 1800. who detected an invisible beams causing heat.

Use of electromagnetic force found its application in railgun research for launching high-velocity projectiles carrying huge kinetic energy.

According to NOAA (National Oceanic and Atmospheric Administration), lightning is an unpredictable force of nature and we are not yet able to forecast when and where it will strike. In turbulent thunderstorm environment, bipolarization of electric charge happens because electrons are taken from ascending particles and accumulated in the bottom of a storm cloud (Cumulonimbus) thus generating electric field. Since atmosphere acts as an insulator, huge amount of charge is needed for lightning to overcome resistance and strike Earth`s surface attracted by positive charge within it. Negative charge from the bottom of a cloud and positive charge from the surface, or some higher structure, create channels for their transfer. Sound of thunder is the consequence of an adjacent air being pushed away faster than the speed of sound (sonic boom). Meeting of two opposite charges trigger the lighting which actually travels upward. A single flash can have one or more strokes (record is 47). However, most of phenomenon occurs inside a storm cloud where electrons travel up. I think that lighting happens according to the Faraday`s law of an electromagnetic induction because cloud (conductor) is moving inside geomagnetic field while according to the Lenz`s law current has reversed direction. Change in a magnetic flux is directed aside while negative charge, electrons flow perpendicular (downwards toward the surface) escorted with mechanical force opposing

the motion. Cloud`s electric field is vertically positioned. Hence, charge travels vertically.

Electric current can be induced statically by rearrangement of the charge (separation in positive and negative pole). If differently charged objects get close to each other they can cause an electrostatic induction or an electrostatic discharge, described with triboelectric effect, may occur as the consequence of an imbalance in charge distribution. Gaining momentum attributed potential decreases transforming into a kinetic energy.

Electrical energy is energy of moving electrical charges as well as statical charge build up on the surface of a conducting material.

Piezoelectricity is property of certain materials which induce current influenced by mechanical stress (pressure).

Ampere (A, amp) is the SI unit for electric current. One ampere is defined as equal to 1 C per second. 1 A = 1 C / sec

Coulomb (C) is the SI unit for electric charge. One coulomb is defined as equal to 1 A per second. 1 C = 1 A / sec

Volt (V) is the SI unit for electric potential, electric potential difference and electromotive force. One volt is defined as equal to 1 W per 1 A (quotient of power and current) or product of 1 A and 1 Ω (current and resistance multiplied).

Ohm (Ω, ohm) is the SI unit of electrical resistance. One ohm is defined as equal to 1 V per 1 A. 1 Ω = 1 V / 1 A

Radiant flux is amount of radiant energy. Device that measures power of an electromagnetic radiation is called radiometer.

SI unit of radiant flux is one Watt (W). 1 W = J/s

In Philadelphia Experiment scenario, I use the word scenario because I do not know did it actually happen (if not then consider this to be just a thought experiment), navy vessel was physically displaced, instantaneously across large distance, after being exposed to the strong EM influence. When ship returned to its original position sailors were merged to the ship`s structure. High energy probably disrupted an underlying (Higgs) field allowing matter to become superpositioned. After returning to the normal state, things were left integrated.

* * * * *

Translational kinetic energy is energy of an object moving through space.

Ekt = 1/2 mv2

m is mass of an object

v is velocity of an object

Rotational kinetic energy is energy of an object`s rotation around an axis.

Ekr = 1/2 I □2

I is the moment of inertia

ω is an angular velocity

Vibrational kinetic energy is energy of the particles vibration inside an object.

Thermal energy is a motional energy of particles, vibrating, rotating and moving through space. Heat is thermal energy transfer between systems or bodies due to a temperature, value of an average particles kinetic energy in a determined substance, difference. Simply put, heat is an energy in transfer.

Heat can have convective stream (flow internally), conductive path (movement of a fluid itself within the system) or radiate (infrared waves emitted outside of the system).

Most important concept in thermodynamics is the state of thermal equilibrium describing no thermal energy exchange between related physical systems. In case od temperature difference, 2nd law of thermodynamics applies until entropy balance is achieved.

Acoustic energy is sound wave caused pressure exhibited through the structure of matter or medium where speed and quality of transmission depend on object`s density and elasticity. Sound is amplified by positive wave interference while negative produces degradation.

v = square root of (η/ρ)

η - elasticity

ρ - density

General formula for the speed of sound in a medium is given by Newton`s

equation v = sqrt. (P/ρ) where P (pressure) should be confronted with an adiabatic index (Laplace correction) thus written as bulk modulus of air, denoted by symbol B.

B = □P

□ is adiabatic index

Positional energy is a form of potential energy object has due to its position.

Mechanical energy is defined as sum of potential positional energy and kinetic energy. It stays constant (conserved) throughout the movement.

Emech = U + K

U - potential positional energy (in case of gravitation it is equal to product of weight and height, U = W h)

K - kinetic energy

SI unit for energy is one Joule (J)

1 J = N x m = W x s = 1 kg x m2 / s2

SI unit for force is one Newton (N)

1 N = 1 kg x m / s2

SI unit for radiant power is Watt (W)

1 W = 1 J / s = 1 N x m / s = 1 kg x m2 / s3

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Deployment of energy releases force when particles configuration, vibration and rotation or motion transform to a boson state characterized as wave function: vigorous energy becomes force to reckon with.

Wave function is the mathematical description of a quantum state, denoted with symbol Ψ (psi), relating position of an electron (three variables x, y, z), time (t) and associated energy (wave amplitude).

First who discussed particle-wave duality was Louis de Broglie winning Nobel prize in 1929. “for his discovery of the wave nature of electrons”.

Physicists at MIT, led by Riccardo Comin, trapped electrons in synthesized pyrochlore mineral crystal, produced by melting together then cooling Calcium and Nickel, having kagome style arrangement of atoms and attaining the same energy level. In 2025. using angle-resolved photoemission spectroscopy (ARPES), quantum geometry of electrons was detected for the first time: until then we could only make statistical predictions of position and velocity. Now we have better understanding of an electron`s structure.

There are two types of waves, transverse (perpendicular) and longitudinal, both characterized by compression and rarefaction.

Electron and photon both act as a particle and a wave which is shown by the double slit experiment.

Particle is a tiny, dot like object that has multiple properties such as volume, density, mass, atomic number, spin, charge but it can not occupy the same position in space as other particle. To do that it must become a wave. Waves can neutralise, interfere or amplify.

Wave is pulsating or linearly spreading activity which has two main characterics: lenght and frequency.

Wavelenght is a distance between two corresponding points on consecutive, adjacent oscillation.

Frequency is an amount of wave reoccurrences at the same point.

SI unit for the frequency is Hertz (Hz). It equals one event per second:

$f = 1 / T$

$1\ Hz = 1 / sec$

In order for waves to travel there must be an underlying medium.

When passing from one medium to another, Snell's law relates angles of incidence and refraction as their sine values ratio. Same dimensionless quantity can also be presented as ratio of the speed of light in vacuum and the speed of light in propagating medium.

$\sin \angle 1 / \sin \angle 2 = n = c / v$

n - refractive index

"There is no such thing as the straight line in nature"... From ancient view proposed by Hero of Alexandria that light takes path of the shortest possible lenght, through classical mechanics, described in Newton`s laws of motion, and Fermat's principle, rule of lowest time which turned out to be a special case, Johann Bernoulli suggested in 1696. that the curve of a fastest descent is an arc of the cycloid while Leonhard Euler extended previous work but it was not until William Rowan Hamilton who stated that an actual path taken by a system transitioning from one state to another is exactly the one that minimises the difference between kinetic and potential energy thus incorporating Lagrangian function into his principle of a stationary action having zero variation in respect to time ($\delta S = 0$)... to the Copenhagen interpretation, Schrödinger equation (see chapter about Quantum physics) and Richard Feynman`s path integral formulation.

Hamilton`s principle

$\delta\mathcal{S} = \delta \int_{t1}^{t2} L(qt)\, dt = 0$

$\mathcal{S}$ is the action

δ - variation

t2-t1 starting and ending time

L is Lagrangian of a system: difference between kinetic and potential energy (Ek - Ep)

Among infinite number of possible trajectories system can take between two temporal points the one that makes an action integral stationary (not changing) will be the one followed.

Principle of least action can be modified for application in field dynamics.

Einstein–Hilbert action, basic concept in general relativity, enables derivation of the Einstein's field equations describing influence of matter and energy over the curvature of spacetime.

Wave function collapse occurs as the consequence of an observation when specific state is reduced from superposition to a single determinated fixed value.

Quantum decoherence is a degradation of the system, which undergoes transition to the classical mode, happening due to its interaction with an environment.

Bose-Einstein condensate (BEC) is an extreme state of matter, exhibiting exotic behaviours like superfluidity and superposition, taking place when atoms are cooled near an absolute zero temperature (-273.15°C).

Cosmic anthropology

Duration of human civilization compared to Universe age is minuscule, almost insignificant. It is much more likely that we are an incidental occurrence rather than planned event.

To get an impression of the "history of mankind to Universe" ratio I decided to display both chronologies on a same timeline:

Age of the Universe ((observable part): 13.8 billion years

Planck epoch: 10`-43 s

Inflation: 10`-32 s

For a comparison, blink of human eye is 10`-1 s.

Cosmic neutrino background (CNB) : 1 s

Early Universe: first 370.000 years

Dark matter: first 200 million years

Primordial stars and galaxies formation: 200 to 500 million years

Cosmic dark era: first 1 billion years

HD 140283 (Methuselah star): 14.5 billion years (+- 0.8 billion years); 13.7 billion years

Milky Way: 13.6 billion years

Andromeda galaxy: 10 billion years

Sun: 4.5 billion years

Earth: 4.5 billion years

Life: 3.7 billion years (single cell Eukaryotes and Prokaryotes)

Cyanobacteria: 3.5 billion years (photosynthesis, Oxygen)

Green algae: 850 million years

Multicellular sponge: 700 million years

Cambrian explosion: 530 million years ago (Trilobites - primordial Arthropods)

Plants (land): 460 million years

Turtles: 260 million years

Mammals: 210-225 million years

Primates: 55-90 million years

Homo habilis ("handy man"): 2.4 - 1.5 million years

Homo erectus ("standing man"): 2 million years

Homo sapiens ("wise man"): 300,000 years

Blombos Cave (South Africa): an oldest known drawing, made on ochre stone fragment, dated around 73,000 years ago

Cave of Maltravieso (Spain): hand stencil dated around 64,000 years ago

Migration from Africa: 50,000 to 70,000 years

Neolithic revolution: around 10,000 BCE (development of agriculture)

Emergence of Sumerian, Egyptian, Iranian, Peruvian, Mesoamerican, Minoan, South Asian and Chinese cultures: 5.000 to 3.000 BCE

Kish tablet: 3500 years BCE, Sumer, Mesopotamia. Written in proto-cuneiform. Not yet deciphered.

Epic of Gilgamesh: 2100 BCE, Sumer, Mesopotamia. Written in Akkadian cuneiform (extinct, replaced with ancient Aramaic). Immortality, flood myth.

Enuma Elish: written around 2000 BCE in Akkadian cuneiform, Babylonian creation myth explaining how the world arose from chaos and primordial waters, god Marduk fights and wins over the chaos dragon Tiamat thus bringing order, humans originate from the blood of Kingu (commander of Tiamat's army)

Phaistos Disc (Minoan claywork): 1850-1600 BCE or 14th century BCE. Not yet deciphered.

Rigveda: 1500-1200 years BCE

Solomon`s Temple (First Temple): 957 years BCE

Temple of Apollo in Delphi (7th century BCE, after fire rebuilt in 6th century BCE): located on Mount Parnassus, "know thyself"

Tao Te Ching: 6th-4th century BCE

Pythagoras (570-495 BCE): numbers are the fundamental building blocks of reality, concept of immortal soul and cycle of reincarnation, cosmic order.

Altar of the Twelve Gods: 522.-521. BCE

Socrates (470-399 BCE): left no written works (probably destroyed), soul is an essence of a human

Plato (428/427-348/347 BCE): beyond the physical world lies a realm of forms or ideas, difference between belief (sensory experience) and knowledge (understanding), concept of eternal soul

Aristotel (384-322 BCE): idea of an "Unmoved Mover," the Prime Cause or Ultimate Reality

Aṣṭādhyāyī (Panini): 4th century BCE

Rosetta stone: 196. BCE, written in three languages (Egyptian hieroglyphs, Demotic and Greek), used to decipher hieroglyphs

Dead Sea Scrolls: 3rd century BCE - 1st century CE

Birth of the Jesus Christ: 6-4 years BCE

Crucifixion of the Jesus Christ: 30. to 33. CE

Quran: 610. - 632. CE

Christopher Columbus first voyage: 1492. - 1493. CE

Voynich manuscript: material dates back to the15th century CE but it could have been written later. It is not yet decrypted.

Tycho Brahe observed a Supernova (SN 1572): 1572. CE

Johannes Kepler observed a Supernova (SN 1604): 1604. CE

First telescope (Hans Lippershey, Galileo Galilei): 1608.-1609. CE

"Philosophiæ Naturalis Principia Mathematica" (Isaac Newton): first published 1687. CE

United States Declaration of Independence: 1776. CE

Invention of a vaccine (Edward Jenner): 1796. CE

Switzerland (Confoederatio Helvetica): 1848. CE

"A Treatise on Electricity and Magnetism" (James Clerk Maxwell): 1873. CE

Electron discovery (J.J. Thomson): 1897. CE

Special theory of relativity (Albert Einstein): 1905.

General theory of relativity (Albert Einstein): 1915.

Salvador Dali "The Persistence of Memory": 1931. CE

"On Computable Numbers" (Alan Turing): 1936. CE

United Nations: 1945. CE

Nuremberg trials: 1945. - 1946. CE

Apollo 11 first human crew Moon landing: 1969. CE

Metaphysics of the Universe - Nature of Reality: 2025.

Sounds of silence

In the beginning there was a disturbance of the medium.

Sound is a wave travelling through the physical medium, either gas, solid or liquid. It is adiabatic (heatless) transfer of an energy between systems. Can waves travel through the Universe? Yes but obviously not the sound waves since there is no physical medium only vacuum energy and underlying field(s). Just special types of waves can propagate across the Cosmos like electromagnetic and gravitational. However, there are exceptions such as primordial plasma and clouds of gas floating around galaxies but we must rescale the sample 57/58 octaves above original pitch, or in other words, 144/288 quadrillion times higher than original frequency.

"Sonification" is a method of data perceptualization. Back in 1971. using Geiger counters space explorers have detected the Cygnus X-1 (HDE 226868), a rotating black hole located approx. 7,200 ly from Earth, producing peak flux density of 2.3 x 10`3 Jy.

Karl Guthe Jansky, one of pioneers of radio astronomy, detected radio waves coming from the constellation Sagittarius in our galaxy Milky Way. Decades later it was found that the source of this radiowaves is a compact, non-stellar object called Sagittarius A* but it was not until 2020. when scientists Reinhard Genzel and Andrea Ghez discovered that it is a supermassive black hole located some 26,000 ly from us. In honor to Jansky, non-SI unit used in radio astronomy for spectral flux density is named after him while duo Genzel&Ghez received Nobel prize in physics.

By combining X-ray, near-IR and mid-IR data obtained by telescopes around the world, Chandra and NASA joint effort interdisciplinary team resynthesized multiwavelenght material into a musical form available at following link:

https://chandra.si.edu/sound/sgra.html

It sounds lyrical, almost like playing harp.

They also translated pressure waves, emitted by supermassive black hole in the Perseus galaxy, that caused agitation in a surrounding gas. What they got is unprecedentedly disturbing noise causing chills in nervous system and temporarily paralysing an unsuspecting individual: deep, creepy roar of an ancient cosmic behemoth capable of devouring an entire galaxy. Please, proceed with extreme caution!

https://chandra.si.edu/sound/perseus.html

Considering its estimated weight of 2 to 5 billion solar masses, Perseus giant is a true relic black hole.

What is the main difference between light and sound waves besides latter being mechanical not electromagnetic? Sound waves have much longer wavelenghts and much lower frequencies. Accordingly, sound waves carry much less energy.

Audio waves were discovered by Leonardo Da Vinci. Galileo Galilei made analysis of sound properties.

Sound speed in air is 330 m/s, in water 1500 m/s, in iron 5000 m/s and in diamond 12,000 m/s. Given values are just approximations because sound speed depends on medium temperature and density.

Wind is movement of air caused by pressure differences arising from unevenly distributed solar heating.

Winds on Neptun can travel at 555 m/s.

Ernst Mach introduced a ratio relating fluid or object`s movement velocity and speed of sound in respective medium, gas or liquid, which can be equal to 1 Mach, subsonic (less than 1 Mach) or supersonic (above 1 Mach).

$$M = v / vs$$

M = Mach

v = fluid or object`s movement velocity

vs = speed of the sound in respective medium

Sonic boom happens when fluid or object`s movement velocity exceeds speed of the sound in respective medium. Light analogy is Cherenkov radiation.

Sound frequency, pitch, is a rate at which waves pass through a determined point.

$$f = v / \lambda$$

f - sound frequency

v - speed of the sound

λ - sound wavelenght

Remember the formula for light frequency?

$$f = c / \lambda$$

Same formula applies for both light and sound frequency. Basically, wave is a wave.

Human hearing range is 20 Hz - 20 kHz. Frequencies below and above are called infrasound and ultrasound, respectively.

I will use Windows Media Player to play my favourite tune and discover what are properties of the sound.

First thing that interests me is "decibel" unit since we use "volume" effect most often. We already know it describes the loudness of a sample: more decibels mean the sound will be louder while less decibels mean the sound will be lower. Hence, "decibel" unit obviously has to be related to an output power.

$I = p \times v$

I - sound intensity (volume, amplitude or loudness)

p - sound pressure

v - sound speed

Sound intensity SI unit is Watt per square meter (W/m2).

Named after Alexander Graham Bell, decibel (dB) is a unit used for expressing logarithmic function of relative sound intensity or ratio between sound and reference intensity.

I = 10 log 10 (I / I0) dB

I - sound intensity

log - logarithm

I0 - reference intensity

Besides volume of sound, (unavoidable) fundamental property and raw in its essence, there is profound one - fidelity - which determines an audio quality, important to music connoisseurs. Achieved through equalizer settings, it is adjustment of dynamic range and particular frequencies level belonging to the same sound, as well as removal of noise.

Destructive Cosmic Events (DiCEs)

We are not safe and this Universe is not fine tuned for us.

DiCEs (Destructive Cosmic Events) are potential catastrophes on cosmic level that can occur, maybe not in our lifetime, but we have no means to adequately respond. What DiCEs imply is that Universe is not fined tuned for us. We can survive only if we find the way to solve all twelve. Until then, our existence is hanging on a thin hair.

Twelve (12) Destructive Cosmic Events (DiCEs) listed by an order of the probability - first mentioned are the most probable to happen sooner or later:

1) ASTEROID IMPACT: Huge asteroid(s) coming from outer space. Apophis (340 meters long) will pass dangerously near us in 2029. Sentry Impact Risk Table, operated by Center for Near-Earth Object Studies (CNEOS) located in Caltech, Pasadena, California, is an automated collision prediction system. They say we are safe. Safe? With three hundred forty meter rock above our

heads? Read this part: "...as it encounters our planet’s gravitational field in 2029.". It will fly that near? Then it can surely influence Earth`s communications and electronic systems. And we are safe? People will go insane just watching the twenty (20) Megatone stone getting closer and closer. Another worry I have is that asteroids could actually be camouflaged deep space probes. Do not talk to me about safe. Rather tell me what is an estimated range of its transit - "less than 32.000 kilometers from our planet’s surface". An average lenght between Earth and the Moon is approx. 385.000km. Thirty two thousand is about 1/10 (one tenth) of that lenght: Apophis will pass at one tenth of the lenght between Earth and Moon! Diameter of the Moon is 3,475 km or 3,475,000 m. Divided by 340 we get 10,220 (ten thousand two hundred and twenty) ratio (1:10,220) meaning it will be hard, if not impossible, to see the Apophis with bare eyes. We will need some zooming equipment to see it properly. Smartphones could suffice.

2) SUN (IN)ACTIVITY: a) Solar flare, or even coronal mass ejection (CME), that will disturb planet`s magnetosphere creating powerful geostorms around the globe and disrupt electric power grid and communications. b) Since every star has its lifespan our Sun will too eventually burnout. Luckily, we are talking about several billion years until that happen.

3) GEOMAGNETIC FAILURE: Earth`s boiling core spend available fuel, cool and slows spinning thus removing protective magnetic field that shields us from dangerous cosmic radiation.

4) DEADLY PATHOGENS: There are many potential places of extraterrestrial and Earth origin from where deadly pathogens could emerge: outer space, unexplored systems and planets in our vicinity, Mariana Trench, polar ice or they could be developed in biochemical laboratories around the world. What scares me the most is fact that humanity is utterly unprepared regardless of a significant budget involved. Just look at the Corona virus pandemic: relatively mild virus caused global health, financial and security problems mostly due to two factors - 1) lack of prompt and proper medical response (politics and private interests over public wellbeing) and 2) resistance to vaccination and safety precautions. I ask: "Are you aware what would happen if much stronger virus caught us"? The answer is obvious:"We wouldn`t be

here now". Why? Because of disorganized system and human stupidity.

5) NATURE RESPONDS: What if the Universe behaves like a living organism or is one? If imbalance is created at some place than Nature activates its counter measures, its immune system, to restore the cosmic equilibrium. Since humans destroy their entire environment, not just on surface but an underground and sky as well together with associated ecosphere, we can expect more earthquakes, erruptions of lava, tougher microorganisms, global drought or new ice age.

6) EXTRA-TERRESTRIAL INVASION: Alien attack using advanced technology from which we can not defend.

7) ENERGY OUTBURST: Harmful electromagnetic emission from any source other than Sun, which is listed separately, like blast of supermassive black hole jets.

8) COLLISION WITH ANOTHER GALAXY: 3-5 billion years from today, Milky Way is expected to crash with Andromeda (Messier 31). We need a new habitable planet somewhere safe and enough space ships to transfer an entire population. Good news is that we have plenty of time to find solution or we can play game of chance since there is little probability for individual stars to bump at each other due to large interstellar space in-between. However, odds are not promising if we end up on the M31 supermassive black hole course.

9) BLACK HOLES: black holes colliding in our vicinity creating gravitational waves strong enough to push the Earth out of its orbit around the Sun or traveling black hole which will swallow us.

10) COSMIC DISSOLUTION: All stars will get exhausted, black holes will swallow their remains and entire Universe will cool down to an absolute zero

leaving nothing behind.

11) NEW COSMIC CYCLE: Reverse expansion (contraction) or The Big Crunch.

12) COSMIC BLEND: New Big Bang happening inside this Universe or in our cosmic neighborhood causing mutual blend and havoc.

Beauty and extent of the human thought

Existence is a state of being. The other is non-existence.

Metaphysics of the Tao Te Ching

Tao Te Ching is the most profound and concise philosophical text I have ever encountered. It contains both metaphysical and ethical teachings of an ancient Chinese wiseman called Laozi (romanized: Lao Tzu). Just as mysterious as his text, it is believed that this person lived around 6th century B.C.E.

Alongside Zhuangzi (romanized: Chuang Tzu), coming few hundred years later, it is considered to be the foundational cornerstone of Taoism (Daoism) - one of three Chinese philosophy and religion stems together with Confucianism and Buddhism.

Famous psychologist dr. Jung wrote foreword and commentary for the book "Secret of the Golden Flower", Richard Wilhelm`s translation of the Chinese book of Life, another sinitic esotericism and an excellent reference for those who wish to research Chinese mysticism more thoroughly. Long time orally transmitted it was first printed in 18th century.

Preceding all mentioned comes I Ching or The Book of Changes, hexagram divination method, dating back from thousand to several hundred years B.C.E.

Tao Te Ching literally translated means "Book of Way and Virtue". I am using dr. Wu`s English translation, free available on-line, because Croatian translation I own, in a form of soft, pocket edition isn`t precise enough.

Work contains 81 verse. I will cite only those related to the metaphysics, and share my thoughts, although entire book deserves proper attention from a reader since it constitute an essentials of the life wisdom.

Original text is *italicized*.

My comments are written below with regular font.

1

Tao can be talked about but not an Eternal Tao.

Names can be named but not an Eternal Name.

How can we discuss that which is out of our observational scope?

How can we name that which encompasses all things and phenomenons?

We can`t.

4

Fathomless, It seems to be an origin of all things.

It seems to exist for ever.

Source of everything and every phenomenon, including Time, is imperceivable due to our inferior position and limited (in)sight. Being source of Time it is outside of it and unaffected with it. It has no beginning because It is the beginning. By having no beginning It is endless and eternal.

5

No amount of words can fathom it:

Better look for it within you.

I believe that we humans are walking reflection of the creation. There is so much in us resembling the birth of Cosmos: a) Our eyes portray the Big Bang: black center depicts dark age while colourful surroundings what came later. b) Our lungs breathing, inhaling and exhaling, mimic expansion and compression of the spacetime. c) Human growth begins with seed which is two combined into one.

Every object in the Universe and every living being inherit properties innate to the divine source same as children receive qualities belonging to their parents.

Thus, looking into yourself you can find echoes of the Supreme.

8

The highest form of goodness is like water.

Water knows how to benefit all things without striving with them.

...it comes near the Tao.

Higgs field sounds just like water. It supports each particle and every object. It serves as the bridge between hidden and manifested.

11

While the tangible has advantages,

It is an intangible that makes it useful.

Empty space in between wheel rods or galaxies, despite being non-physical, has its functional purpose.

13

Only he who is willing to give his body for sake of the world is fit to be entrusted with the world. Only he who can do it with love is worthy of being steward of the world.

Tao Te Ching has been written several hundred years before Jesus Christ. He could have sacrificed himself influenced by it.

14

Continually... moves on,

Until it returns beyond the realm of things.

Residing outside of Time, Tao is unaffected by Time: for Tao there is no temporal flow nor chronological order. There is only now. Hence, Tao does everything immediately. It moves without duration or delay. It doesn`t age: It is eternal. Absolutely independent, Tao is always awake. Being always awake, Tao is restless. For how long can It stop when there is no Time?

How can Tao move in and out of a physical realm? I have several ideas. 1) There could be porous structural openings in the fabric of spacetime, infinitesimal traversable panels Tao can sneak through. 2) Crossover can be diffusional, 3) using frequency modulation or 4) simply by superpositioning, meaning, for incorporeality material world is transparent, posing no obstacle at all.

25

I do not know its name.

I style it "Tao".

And, in absence of a better word, call it "The Great."

Although we can not completely and precisely name that which is beyond our scope of reasoning, we must have an objective reference in order to articulate what we mean. Otherwise, we fail to properly communicate our thoughts.

28

And to return again to Primal Simplicity.

When Primal Simplicity diversifies...

and

32

Small as it is in its Primal Simplicity...

When once the Primal Simplicity diversified.

It is incredible how approx. two thousand five hundred (2,500) years before modern scientific discoveries, in cosmology and physics, Lao Tzu talks about singularity (primal simplicity) and diversification.

Once I had a dream of an expedition venturing across dense forest. Hidden behind some kind of shrub they found narrow entrance. Adult person had to crawl through long tight burrow in order to get inside the small cave. There were two chambers: first one where you could stand up and second one with a lot of scrolls placed on the floor and shelves carved in dirt walls. On other side of the second chamber there was a man, dressed in robe, sitting in a chair engraved from soil. Beside him pencil brush and blank paper. He looked alive but also sleeping. Very likely, he was deeply meditating. How long was he there? Judging by the number of scrolls he has written, months or even years. This is exactly how Lao Tzu could have gained his insight: by lasting, undisturbed concentration and contemplation his mind transcended the boundaries of local spacetime. Maybe it was Lao Tzu whom I dreamt about. Imagine the wisdom contained in that scrolls.

Small as it is in its Primal Simplicity...

I am often called "small" because I am lower in my work and social hierarchy or simply because I am physically inferior to others. Now, when I know that Tao is also "small in its Primal Simplicity", I actually feel flattered by those

individuals who call(ed) me small.

40

All things under heaven are born of the corporeal:

The corporeal is born of an Incorporeal.

Material world is built upon physical foundation: underlying field(s) with laws of nature integrated. The real question is how did that root layer came to be. Lao Tzu uses term "incorporeal" which means metaphysical or beyond physical. It is the superior state of existence. For example, when we make something we are outside of that something. Our position, as originator, is superior to what we produced because we can alter it but the product can not alter us. We are intangible to it same as "Incorporeal", as our originator, is intangible to us. However, if provided there could be means to communicate between two.

42

Tao gave birth to One,

One gave birth to Two,

Two gave birth to Three,

Three gave birth to all the myriad things.

Is it possible that Lao Tzu refers to the singularity (One), matter and anti-matter (Two) and proton, neutron and electron or Hydrogen, Helium and Lithium (Three) which then created the known Universe?

Or, Tao gave birth to the Time (One) which divides into the Past and the

Future (Two) from which three spatial dimensions (Three) are derived?

43

Only Nothing can enter into no-space.

Everything material is physically restricted. Even chargeless and almost massless neutrinos can not penetrate matter indefinitely. Sooner or later they interact with sensors and become detected. Then what can stay absolutely unnoticed? Only incorporeal: that which has no substantial properties or visible form, ghostly, spiritual, transcendental or "Nothing". In order to travel outside of the physical domain an object must become dematerialized. It must lose all material properties. It must lose "self".

What is "Nothing that can enter into no-space"? An abstract of the selfless thought?

52

All-under-Heaven have a common Beginning.

Again, alluding to the singularity?

To see the small is to have insight.

When we explain the subatomic (quantum) level then we will understand the nature of reality.

1, 4, 14, 21, 25 and 32

Laozi uses this attributes to describe the Tao: *nameless, fathomless, an origin of all things, exist for ever, formless, soundless, incorporeal, imageless, indefinable, unimaginable, timeless, elusive, evasive, silent, boundless, alone without change, small as it is in its Primal Simplicity.*

We can not name or visualise that which is beyond our scope of reasoning. By calling It Nameless and Imageless any and all names or images can be attributed depending on whether we refer to particular manifestation or quintessential phenomenon.

Time is obstruction. Without Time everything happens now. We humans can not understand this but can watch in quantum entanglement. Like being bound by gravity for entire life and then exchanging our environment for zero gravity. Suddenly we become massless, floating. You must experience it to get the notion. No words can precisely and completely describe the feeling.

We mortals can not even fantasize who or what is the root source of entire existence, supreme layer of the self-awareness. There could be lesser divinities, consequential, residual emergences having greater predecessor, Spirit Guardians, an Overseers, entities with telepathic abilities or advanced technologies blurring our insight. Moreover, reality could be fractal.

Each individual observes the reality from own perspective. When majority of people agrees upon the same vision it is called a (religious) truth but it has nothing to do with the substance itself. An essence remains unchanged, untouched by different opinions and interpretations... Alone.

Tao has no authority other than Itself.

Etymology

Word is an expression of the thought. It can be spoken or unspoken. Without word thought is not articulated, existing only in a raw form as electrochemical impulse.

Experiment you can do on your own: Lie in bed. Close your eyes. Concentrate on your brain and mind. Try to move an arm or a leg. Now try to think. You will notice how motoric instructions travel directly from your motor cortex to the peripheral nervous system, initiating immediate voluntary muscular activity, but for thinking to be achieved first your must form words.

Ergo, to follow an evolution of the human thought we can follow an evolution of the word. Scientific discipline engaged in the study of words origin, history and evolution is called etymology. Together with syntax, semantics, morphology, pragmatics, phonetics and phonology it forms broader field called linguistics.

First articulations of the thought were not written or uttered. Visually, there were cave paintings and hand stencils evolving with time into pictographic writting then Sumerian cuneiform, hieroglyphic (Egypt) and logographic (China) symbolic writing systems. Audibly, there was slurred speech evolving with time into recognizable pronunciation and structured verbal communication.

First alphabet, ordered set of elementary pieces of a language (letters or symbols), was developed by Phoenicians. Greeks improved it while Etruscans made further progress. It was Latins (Romans) who produced an alphabet as we know it today. They also invented specific type of numeralization called Roman numerals (I, V, X, L, C, D, M) which was replaced with system 0-9 devised in ancient India. Glagolitic alphabet, an oldest known Slavic alphabet, was made in the 9th century by Saints Cyril and Methodius from Thessalonica. Soon after it was succeeded by the Cyrillic alphabet.

Term alphabet comes from the combination of first two letters of Greek alphabet, Alpha (A, α) and Beta (B, β).

Important terms belonging to contemporary languages originated in antique:

Cosmos (κόσμος), chaos (χάος), star (ἀστήρ), physics (φύσις), metaphysics (μετά-φύσις), energy (ἐνέργεια), synergy (συνεργία), chemistry (χημεία), mathematics (μαθηματικός), democracy (δημοκρατία), hour (ὥρα) and meter (μέτρον) are of Greek ancestry.

Words Universe (Universum), nature (natura), singularity (singularis), science (scientia), art (ars/artem), religion (religio), minute (minuta) and second (secundus) are of Latin origin.

Sanskrit (Saṃskṛtam), language of Vedas and Upanishads, is the source of many terms with Hindu religious background that have influenced popular culture worldwide: mantra, avatar, yoga. Some of them are carrying deep sacred meaning: Brahman, Om (Aum), Brahma, Vishnu and Shiva (Trimurti).

Why is Sanskrit important beside having wide cultural impact? It is important because it was one of the first systematical articulations of human thought. Moreover, it was constructed by the people who used deep meditation to connect with an essence of the being. The construction was not just a simple assignment of the related meaning to the words. Allegedly, letters represent exact syllables given by the "Devas" (Gods), used for mutual communication, priorly generated by the Brahma Itself.

This "Devas" or "Gods" remind me of a highly advanced extraterrestrial specie. Talking about xenolinguistics? Try using Sanskrit.

Over a centuries, across array of countries, number of scripts have been used to write the Sanskrit: Vedic of Rigveda texts is an oldest known form dating back to around one and half thousand years BCE. Subsequently, around 500 y. BCE, it was refined and standardized into the classical system of Aṣṭādhyāyī by Panini, an Indian scholar, today considered to be father of the linguistics. Two most famous Sanskrit narratives, the Mahābhārata (Bhagavad Gita) and the Rāmāyaṇa (Life of Rama), were produced using an Epic Sanskrit structurally resembling an antique Iranian, early Avestan Gathas and Greek Iliad, made by Homer, having metre and rhythm as their prominent components.

Although the formal study of language is considered to start with the Panini in 5th century, Sumerian and Egyptian inscriptions are an oldest found.

Sanskrit contain(ed) what we nowadays refer to as ordinal and cardinal numbers but not yet zero. Zero was first recorded in a 7th century temple in Sambor, on Mekong river, Cambodia and in a temple at Gwalior, India, in the 9th century.

Otherwise, number zero source could be in ancient Mesopotamia, some scholars say, dating around 4.000 years ago. The Mayans used a zero marker in their calendars. But these early counting systems only saw the zero as an empty separator not as a number with its own unique characterics and values.

The Bakhshali manuscript is an ancient Indian mathematical text, written on birch bark, dated 224–383 AD or 885–993 AD according to the recent study. It contains the earliest known use of a zero symbol which was depicted using a dot as a placeholder ("Śūnyabindu", meaning: dot of an empty space). "Śūnya(tā)" alone means "nothingness, the void".

Brahmagupta (598 – 668 AD) was an Indian mathematician who first gave rules for computing with zero and introduced the concept of a negative numbers. He made really impressive astrophysical discovery for that time,

much before era of modern telescopes, proposing gravity as an attractive force using the term "gurutvākarṣaṇam". "Gurutvāka" means "mass", while "sana" stands for "to acquire". It can be translated as "to acquire mass". How? By the force of the gravity.

Other contemporary cultures had their own equivalents regarding negative numbers, independently developed, like Greek counting table from Salamis, the Salamis Tablet, dated to 300 years BCE and mathematical texts from the period of the Chinese Han Dynasty.

Sanskrit holds together many mutual phonological properties with Proto Indo-European language family but it has a larger set of recognizable phonemes.

"Oṁ, asato mā sat gamaya

tamaso mā jyotir gamaya

mrityormā amrtam gamaya."

"Aum, lead me from a delusion to the Truth,

Lead me from a darkness to the Light,

Lead me from a death to an Immortality."

This is the calmness mantra used to open mental gateways leading to higher layers of the consciousness by removing physical, spiritual and internal obstacles which blur our astral vision.

Om is sacred Hindu syllable pronounced "aum". This ancient Sanskrit letter first appeared in the Vedas. It is used as the most holy mantra in Hinduism and Buddhism considered to represent the primordial sound of the Universe, the most fundamental of all vibrations, the sound of an emptiness itself. Its dictum, made in the form of chanting, invokes the spirit essence of the Being which connects with us through Atman, our inner-self, after we have removed all the mental obstacles achieving the state of perfect tranquility (divine balance).

Word “sat” stands for "truth, reality, existence or unchangeable essence".

"Asat" means "deception, unreality, non-existence or transient illusion".

Word “tamas” stands for "darkness".

“Jyoti” means "light".

Word “mrity” stands for "death".

“Amrta” means "immortality".

Notice the striking similarity between Slavic words "tama" and "umrijeti" and Sanskrit "tamas" and "mrity". It is obvious that Slavic languages, having Indo-European roots, were at least partially derived from ancient Vedic script.

One of the most inspirational quotes I have read comes from Dhammapada, sayings of Buddha collection, in verse 54: "*The perfume of flowers goes not against the wind, not even the perfume of sandalwood, rosebay or jasmine but the perfume of virtue travels against the wind and reaches into the ends of the World*".

Hence, 75,000 years have passed since first cave drawings and slurred speach until modern art and multilingualism. 5,500 years have passed since development of first wheel until invention of the weapons for mass destruction. Technologically we advance 13x faster than mentally. Urge to mutually kill ourselves, that primal savage instinct, is stronger than idea to communicate. When this circumstances reciprocate, at least, then we can say that we are on the right track to survive as a specie.

Logic

After languages have been structured deeper understanding of the meaning and relations has advanced. Hence, to continue following the development of human thought we must proceed by close examination of an intersection between rational and absurd, what can be empirically justified and what is diametrically wrong.

Logic is an operation of correct reasoning used to form valid conclusion based on given premises. It can be deductive or inductive. While deductive inference is always certain when based on true premises, because it is derived from universal to particular, inductive reasoning is always uncertain, regardless of the premises verity, because it is derived from particular to universal. In such case we can apply Bayesian conditional formula for

calculating statistical probability. This dynamical approach is unique due to the fact that incorporates belief, renewed with emergence of fresh data, making sensible opinion rather than strictly mathematical prediction.

$$P(X/Y) = P(Y/X) \times P(X) / P(Y)$$

P (X/Y) - posterior probability of event X taking place if Y is true

P (Y/X) - likelihood of event Y taking place if X is true

P (X) - prior probability of event X taking place

P (Y) - marginal probability of event Y taking place

Simplest type of deductive logic is called syllogism. Originally formulated by Aristotel, it consists of two propositions which taken together lead to conclusion. As Francis Bacon properly noticed, in order for conclusion to be valid axioms must be experimentally verified.

Immanuel Kant was a brilliant mind, much contributed in development of the western thought, and I can not blame him for saying that Aristotel`s logic encompassed everything there is in the field of correct reasoning because Hermann Bondi, another brilliant mind, great mathematician and cosmologist, declared Karl Popper have done the same for the field of scientific method. Humans are, scientists are humans as well, prone to exalt contemporary achievements as final and ultimate. While Bondi may indeed be right about scientific method, system of inferring has significantly progressed after Enlightenment.

Notation advanced with introduction of the formal (symbolic) logic, mostly due to an efforts of Gottfried Wilhelm Leibniz and George Boole, then Gottlob Frege devised predicate logic which could, unlike Aristotel`s, represent mathematical statements such as Euclid's theorem* using conceptual transposition.

While Boolean algebra, essential to computer programming (digital algorithms) and electronic circuits, works with binary truth elements (true/false, 1/0) and basic logical operators (AND/OR/NOT), a broader, more complex field of an algebraic logic covers sets with many truth elements and extended logical operations.

Truth tables, as envisioned by Ludwig Wittgenstein, who`s Tractatus Logico-Philosophicus received attention of the Vienna Circle, are structured graphicals of a Boolean function expressing vary by all input and output variables combinations for truth values, logical operations or conditions.

Propositional logic differs from the syllogistic by focusing on relations between terms. These relations, called logical connectives of Zeroth-order, can be: conjunction (AND, ∧), disjunction (OR, ∨), negation (NOT, ¬), implication or conditional "if...then" (→), equivalence or biconditional "if and only if" (↔). Wider application includes negations of connectives: non-conjunction (NAND), non-disjunction (NOR), non-implication or abjunction and non-equivalence. Disjunction can be either inclusive or exclusive (XOR). If exclusive then it is true only when inputs differ. With multiple inputs, it is true when number of true inputs is odd.

First-order logic, a.k.a. predicate logic, is an extension of the propositional logic`s elementary set of connectives. 1st-order logic includes objects, functions, predicates and quantifiers which can be universal ("for all", ∀) or existential ("there exist", ∃).

Domain, or domain of discourse, is the collection of all elements that we are discussing in a particular context. Set logic involves all domains making it the most complete tool for expressing universal values.

Kurt Gödel`s completeness theorem formulates that system is determined only if each logical statement is provable within that system, meaning, for

each logical statement there must exist a proof within the system while further inquiry brought Godel to an extended resolution in the form of two incompleteness theorems which expose formal system`s limitations, an inability to prove self-consistency by using own set of tools: 1) In every sufficiently complex mathematical system there are statements that can not be internally proved as true or false. 2) System's integrity cannot be proven using own set of axioms and principles. In other words, axiomatic truths are insufficient to prove system`s validity.

You must have an outside observer.

What Godel ingeniously did is that he coded mathematical equations into numbers and then numerically wrote "this statement cannot be proved" which as mathematical statement must be true or false but whether true or false, and regardless of newly added axioms, Godel resolved that there are statements which can not be proved or disproved.

If statement can not be classified between two variations then both are equally possible. Doesn`t this perfectly describe a quantum state of things?

Same paradox, symbolically expressed as logical negation, is found in sentence "this statement is false":

If true then false.

If false then true.

Problem with self-referencing statements can easily be demonstrated using the sentence "This statement is God". If we consider axiomatic truths to be correct by mere instance of their formulation then this sentence is God which is easily disproved by any challenge put forward. Can we prove it with another axiom e.g. "Previous statement is true"? No because we also have to validate it's accuracy. Just claiming means nothing. We must experimentally

confirm. Thus, each statement is either true or false, in deeper sense even both or none, but it can not be proven or disproven by applying it's own structure regardless of quantity and complexity involved.

Second-order logic extends range of quantification by adding "for all properties" into the syntax.

Modal logic applies concepts of knowledge and belief as modalities of necessity (□) and possibility (◇), deontic logic expands range of modalities over obligation, permission and forbidden/not allowed statements while temporal logic includes conditions related to the time (future, always, next, until), either in linear or branching sense.

Finally, there is a digital logic realized through construction of the logic gates, operational nodes in an electronic circuits, which direct flow of the binary values 1 (high voltage) and 0 (low voltage) according to the schematic diagram used in engineering and manufacturing process.

Logic nodes with basic functions: AND, OR, NOT (Inverter), NAND, NOR, XOR, and XNOR. Also, unavoidable, error checking instruction "repeat last sequence".

There are combinational and sequential circuits which outputs are determined by inputs or both inputs and previous states, respectively.

* * * * *

Brain is developed much above mere understanding of an events and binary response. We can block thoughts, connect images, form opinions and reveal patterns (higher order functions). Process of correct reasoning is researched inside field of the cognitive psychology.

Reasoning systems can evolve beyond imagination. We can use logical conditions such as linear exchange (swap) or next level (elevation), in case of similar/same objects co-occurrence, cylinder inference for reaching frameless (out-of-the-box) decisions, "roof encompasses all" or "horizon" functions.

Logic is an exiting path leading out of the labyrinth of thought.

Good speaker must always utilise the right amount of words, maintaining an utmost clarity in expression (find the most precise articulation), and avoid unnecessary logical complexity. Thus to describe specific meteorological state it is perfectly enough to say "rain is falling". Why obscure the message by being indirect, conveying inappropriate terms or using too few elements?

Every circumstance provided displaying certain premise must be scientifically confirmed, retestable and under exactly the same experimental conditions must yield exactly the same results without any anomaly whatsoever.

When working with more than one premise, and associated properties, sets, functions, events, durations and other inference components, combinational skills are indeed welcomed requirement implying that for deeper insight corresponding mental level has to be achieved. As the consequence of better personal structuralization like electron orbits occupying superior energy positions not just in EM and intensity classification modes, typically presented as numerical min/max value range detailization or equivalent, visual power segmentation, both progressively advancing together with our scientific scope enrichment as persistent, almost stubborn, continuation of technological legacy and successive development of reasoning systems, but, more importantly, in higher states of conscious activity immeasurable, even undetectable using current equipment. Meaning, the more you resemble higher awareness the more you encompass its divine perspective and acknowledge its immense, unrestricted depository.

From Aristotel onwards, we needed every contributing, beneficial step to arrive where we are today. There exist no isolated stream of thoughts which can grow alone, unaffected and independent. Especially, in modern times with Internet on-line sources at free disposition worldwide. The freedom of information is precondition for the personal freedom. Strictly rural environments detached from commodities of nowadays electronic circuitry and each individual living in a poverty should be covered with broadband network, unobstructed access to it and absolutely depenalized for its use.

Every idea has its predecessor. Rare is genuine authenticity. If nothing else, words you are using are derived by some linguist long before your time. Thus we are obliged to honor scientific legacy.

Premise comparation, essentially being realization of the mutual differences, serves as counterbalance with exclusive purpose of bringing forth collectively valid elements known as universal truth(s).

Each individual observes the reality from own perspective. When majority of people agrees upon a same vision it is called the (religious) truth but the substance itself, an essence remains unchanged. Untouched by different opinions and interpretations, universal truth is not what we think it is nor what we agree upon. Universal truth is the logical conclusion based on scientifically verified premises and relevant in all involved cases without single exception.

* * * * *

In Universe, or rather in our cosmic neighbourhood, everything happens as expected: there are no deviations from the laws of physics. At least not until we start tackling on quantum level or in distant galaxies traveling FTL where constants values could differ from ours.

What stands behind logic of the Nature (Logik der Natur)? Why things happen as they do? Answer certainly doesn`t lie in matter devoid of energy potential. Imagine water streaming down the river. H2O atoms do not have to know anything about movement. They are just pushed forward. Like luggage on the track at an airport. Luggage doesn`t have to know anything about the moving process. Luggage is not involved in track`s functioning. Luggage is passive same as H2O atoms. What is relevent is kinetic energy transforming into the mechanical force (pressure wave). Obviously, logic lies in energy and force. Their behaviour is like preprogrammed. Electrons in magnets coalign under external influence. How electrons communicate? Each orbital can be geometrical representation of an associated numerical value expressing the coded instruction. When merged, orbitals switch into a position determined by direction of force. After chain reaction is completed overall magnetic moment is reconfigured. Isn`t this obvious example of logical connective "if... then and only then" applied on cosmic scale? Where does that line exist if not in electron itself, in physical arrangement of the specific chemical compound or in it`s circular trajectory (geometrical transcription)?

When obese person jumps in a swimming pool why all water splashes out? Does water know what to do in such occasion or there is pressure increase, due to infalling weight, translation of an object`s kinetic energy into mechanical exertion of medium atoms? No, for the sake of examples I have provided, I solemnly dispute any possibility that matter devoid of energy potential could be responsible for any action.

Energy (force) by inherent virtue (imperatively prescribed mechanism of action) is able to move (press), to structurally and qualitatively change (burn, freeze, electrolyse), physically distort and radiate.

Electromagnetism is the consequence of interaction between electrons (charge) thus creating electromagnetic field.

Gravity as an attraction between objects (masses) is mostly related to protons and neutrons but there is another force related to protons and

neutrons, namely strong force, which also binds quarks. Since gravity`s strenght gets proportionally smaller with distance increase, isn`t it justifiable to assume that reverse is the case too? Meaning, with distance decrease gravity`s strenght gets proportionally bigger. Actually, the gravitational formula says so. Hence, strong force could be gravity on the quantum scale.

Gravity could be an energy stream between particles resulting in radiation (weak force) by translation of mass into carriers of gravitational force. Radioactive decay occurs as an uninvited guest on a cosmic dinner party.

We use oscillations of an atom to measure time. These emissions can be stimulated by permeating dark energy or underlying scalar field, not intrinsically by atoms themselves.

Translation of kinetic energy, by mediation of the mechanical force, preserves both momentum and vector (angle of incidence) always taking the most efficient path - the one demanding smallest energy expenditure and respecting the conservation principle.

Straight is the way of the virtue.

If beam of light hits the mirror at 90 degrees angle what will be its reflection angle? Also 90 degrees. Why? Because any deviation would slightly increase an energy demand above minimum required and consequence happens without an observable delay.

Is there an arbiter? Field theory may provide answers.

Malicious abuse

In ancient times, Aristotel proposed an idea of First (Uncaused) Cause because, he said, there is no infinite regress. I agree that maybe there is no infinite regress. Maybe there is. We can not know for sure but merely speculate. There could be just one layer of reality beyond this in which we exist. Yes, no one can deny it, God could be immediately around the corner. People even envision themselves sitting beside divine throne. Or there could be two, three or countless layers in between. Producing an axiom isn't deductive thinking. It is inductive and telling us all about its certainty. Later, during formalization of religion officials sat, selected holy books and defined theological guidelines. They used the very same axiom Aristotel postulated long before them. Then, in recent days, Aristotel's idea is indirectly revived by some Christian promotors through "Kalam" cosmological argument. They forgot to mention Aristotel's contribution. Cheap tricks to fool the masses of believers consequently claiming that "God is because God must be". Do you realize that producing a statement implying its truth is contrary to observing the fact as true and stating it accordingly. Implying, asserting, claiming, or whatever adequate term we use, is not confirming. Confirming is done by series of scientific experiments which do not deter from original result. Religious authorities, clergy, representives of different faith systems play on single, specific card being ignorance. Folks don't know how to properly reason. Inference methods are unknown to general public. Stop hundred people on a street and ask them what logic orders are they familiar with but fanatics among them will get angry and yell, in extreme cases butcher and plant bombs. Same is done by atheistic political regimes. I mean, people are not guilty for being misleaded. Ignorance is guilty. Remove ignorance and you will remove the need for invention of God(s). Then, and only then, the need for worship will evolve independently and in accordance to verified facts. Instead, some governments remove people leaving ignorance still active. You can not solve the problem by dealing with consequences. You must determine the cause of the problem (ignorance) and deal with it. You extinguish fire by fighting an origin of the flame not by pushing away the smoke. It is in primitive nature of men to look for easy, short-term solutions that delay and enlarge an issue across longer period.

I am reading online text written by popular Christian philosopher, which expression is an oxymoron because as a religious devotee he choosed specific denomination as the one and only truth yet by being philosopher he claims to seek for the truth. Why does he seek for the truth if he believes that he already knows it? Either his faith is weak, maybe not realized at all,

or he is pretty sure and just needs additional confirmation. Strangely he finds it in other religion, moreover, in medieval Islamic theology although Aristotel predates both. Why not stating Aristotel as originator since, semantically, he poses the very same argument denying possibility of an infinite regress and formulating metaphysical entity responsible for creation (unmoved mover, primary uncaused cause)?

Religious promoters aren't secure in their mental habitate knowing that when you build house out of twiggies you can expect, sooner or later, total structural collapse.

Quote: "The universe must have a beginning, and since nothing begins to exist without a cause, there must be a transcendent Creator of the Universe.". This statement is threefold: comprised of 1) "must have" proposal, 2) "nothing without a cause" pretentious, improbable exaggeration and 3) "must be" assertion. Overall value is too small for serious interpretation. First premise proposes that Universe must have a beginning. Proposing isn't proving. Maybe it is stretching and compressing without definite start, fractally ad infinitum. Maybe, the more you look the further you see. First premise is overly pretentious argument lacking observational (experimental) confirmation and thus having no credibility whatsoever. Second premise is "nothing without a cause" which means "everything is caused". You haven't fully explored your own Solar system but you encompass entirety of cosmic potential. How can you speak of an edges when you don't know its form nor size? Again, overly pretentious argument lacking observational (experimental) confirmation and thus having no credibility whatsoever. Third line is supposedly a conclusion based on first two premises. How can you derive a conclusion based on two faulty, or at least partial arguments? I propose three alternatives, presented by order of certainty, to "There must be a Creator of the Universe" limitation: Nature, higher specie or supernatural entity other than supreme, computer (or equivalent) simulation. I do not dispute possibility for an ultimate entity which encompasses all reality/ies but strictly speaking of the Universe Creator, as I said before, there is definitely more than one solution. By my count, at least three. Category "higher specie or supernatural entity other than supreme" includes possibility of human race living outside our Universe, or in its future, which became enough technologically advanced to create

new Universes.

Next, interpretation of Ghazali’s inference is used as grounds for proper reasoning but the premises are presented in different order than in the previous set where I have already provided answers.

Samelike, Ghazali`s premises are mere assumptions, uncertain inductive reasoning, rendering derived conclusion as irrelevant. You can not speak for all things in Universe nor you can observe in reality that Universe has a beginning - you can extrapolate to the singularity but not any further.

Elaborating his thesis, religious philosopher speaks of creation of an elementary particles in accelerator. Where does he draw such an idea? In science, problem of baryogenesis is still unsolved. Besides, particles in accelerator are not created but only accelerated. However, particles in collider are broken into smaller pieces, again not created.

Further discussion brings forth "something cannot come from nothing" statement.

If you make simulation of the cosmic future based on the known factors (accelerated expansion, star exhaustion, formation of black holes, heat dissipation) you will get exactly nothing from something: cooled, dissoluted Universe, fading away in the surrounding emptiness.

I hope that we agree how energy counts for something. Tell me, what happens when two sound waves of same properties but opposed phases come into contact? Resulting amplitude is zero, meaning interference is destructive (waves mutually annihilate). Literally, nothing comes out of something. However, because energy can not be destroyed it is rather returned to an underlying medium, transformed not actually cancelled. You claim that these canceled waves can not return into being? I think otherwise.

Logically, something can not come from nothing but who says that solutions can`t be counter-intuitive? Who says that same logic which exists in our Universe also applies on higher levels of existence? And who says that "nothing from something" isn`t reversible? Maybe, existence is the mirror image of non-existence (nothing). There are many possibilities besides the one proposed by religious advocates.

Nothing from which reality arises can not be considered an absence of anything other than in strictly material sense. Indeed, something cannot come from nothing but it can come from certain background phenomenon like singularity but where does singularity come from?

We must distinct between religious (human) concept of God and true supreme entity encompassing all that exist. While former is certainly wrong because it is exclusive and falsifiable theory, not scientifically grounded and not recognized as universal truth, the possibility of second is undeniable. I am not interested what humans, with their current primitive technological status and undeveloped character, think or believe nor what they agree upon. I am interested in the truth, pristine and reachable only by scientific means. Spare me of your beliefs because they are intellectually worthless.

Religious people claim that they have the right to freely confess their religion and speak openly about it. Do I have the right not to hear them? Do I have the right not to be bothered by them? Why can`t they practice their faith without imposing it to others? They publicly make sign of a cross with their hand, visually expose simbols on their clothes or, collectively, build mammoth sized religious statues. How is that discreet? If your faith is discreet I wouldn`t know about it unless I ask you and I would never ask you because I do not care. The only thing I care is how you behave as a living being, are you good or evil, creative or destructive. There is one important thing I discover whenever someone reveals their faith to me. I immediately know that person swapped his own imaginative ability for predetermined stew made of derivative ingredients. I also immediately know that person lacks power for objective criticism. They are apologetic for their own members, savagely cruel for others.

Common experience and scientific evidence? We are considering several hundred years at best of systematic scientific thought and our modern observational techniques (microscope, telescope). What about quantum level? You can not see atoms and their interior. You can only see objects size of microorganism that are on much larger scale compared to that of an atom. Darwin's Evolution is one of the best, scientifically most defined theories I ever heard. He presents diverse classification, carefully describes examples and progressively delivers his view.

If someone wears a little clown hat that doesn't make him a clown. His deliverance does. I mean, Christian vocalist repeats Ghazali`s utterance by saying "an infinite number of things cannot exist". Haven't you heard of number Pi, Euclid's theorem, Euler's proof and similar, Mandelbrot set or Goddel's incompleteness theorems? You subjectively push forward Hilbert's idea because it is supporting your thesis. There is clear evidence for mathematical infinity. You will say that things are not numbers but numbers are tightly associated to logic which connects and binds things. We present abstract with numbers. Imagine 10 or 100 of something. Can you? Is that abstract? Then what is metaphysical if not abstract? You wrote yourself that it is transcended.

Religious philosopher, despite this coined term being absurd, distincts between potential and actual, establishing his thrust in 12th century thought. He doesn't recognize that potential, by its virtue, is actually infinite because contrary, not having potential, necessarily leads to limitation of the set.

When you say "actual infinite" do you mean you don't realize between vector and scalar? You don't acknowledge that there is an infinite number of prime digits? But you assume "countably infinite" which is another oxymoron. Speaking of trinity, if we count "reasonable faith" then there are three of a kind.

What follows is theory about Universe origin. I have presented mine in this

book.

To conclude, this alleged, biased elaboration is of no intellectual worth to me because it is inductive and, therefore, uncertain reasoning. I find deeper philosophy in warm soup or hot tea during winter solstice.

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* Euclid's theorem states that there is an infinite number of prime digits. Primes are natural numbers larger than 1 which can be divided only by themselves and 1 (2, 3, 5, 7, 11, 13, 17,...) while division with any other number leaves remainder (except 2 all primes are odd).

Let us assume there is a finite number of primes. Multiply all them and add one. This product plus 1 can not be divisible with any prime because it would leave remainder of 1. Hence, either this product is prime number itself or there is a prime factor not included in our finite set. In both cases, we successfully contradict an assumption that there is a finite number of prime digits. Meaning, Euclid is right: there is an infinite number of prime digits.

We can demonstrate same proof using factorial n! of positive integer n. As n! is the product of all positive integers less or equal to n then, reciprocally, n! is divisible by any of them. On contrary, "n! + 1" is not divisible because it leaves a remainder of 1. Hence, "n! + 1" is a prime number. Meaning, for every positive integer n there is at least one prime number larger than n implying that the number of primes is infinite.

Leonhard Euler proved, using properties of the harmonic series and the Riemann zeta function, that the sum of reciprocals of all prime numbers doesn't converge to a finite value but diverges to infinity. Accordingly, there must be infinitely many prime numbers.

In 1801., Carl Friedrich Gauss published Fundamental Theorem of Arithmetic: every integer larger than 1 is an unique product of prime factors which finding practically demonstrates how prime numbers are elementary numerical constituents.

Doing math discharges me fast. It is mind exhausting because of false leads and dead ends you often find yourself in. I mean, there are equations not yet solved and you can formulate and calculate day and night without true result(s), sometimes clueless amid all potential variations and numerous parameters. Also, numbers can stretch indefinitely... No wonder why mathematicians lose hair after 40. They pull it out enraged by constant failures trying to solve Riemann hypothesis or find number Pi`s last digit.

Riddles

(1)

Word riddle

"Tucked in, front or behind it is hard to tell

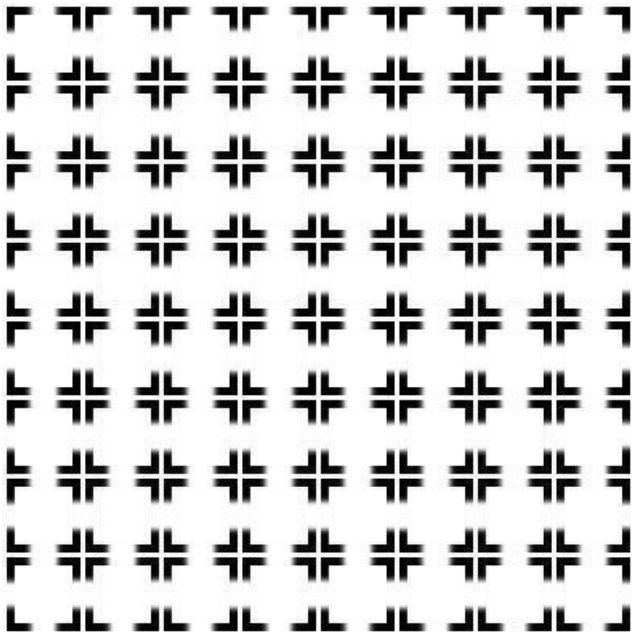
Face painted black, picks food by the smell."

(solution is written under the pattern riddle)

(2)

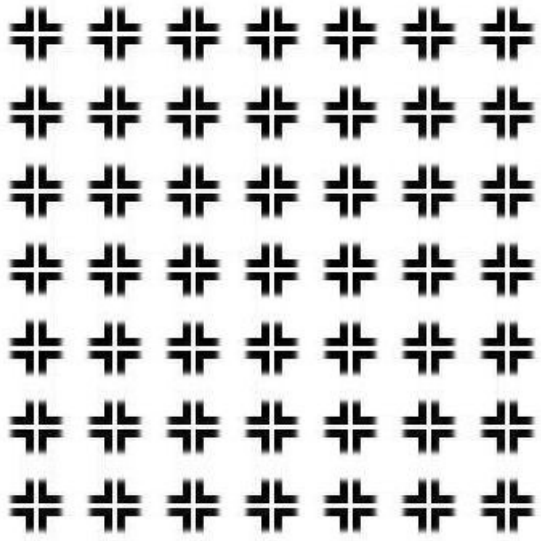
Visual riddle

What is the basic shape that forms this pattern? Is it broken square or intersection?



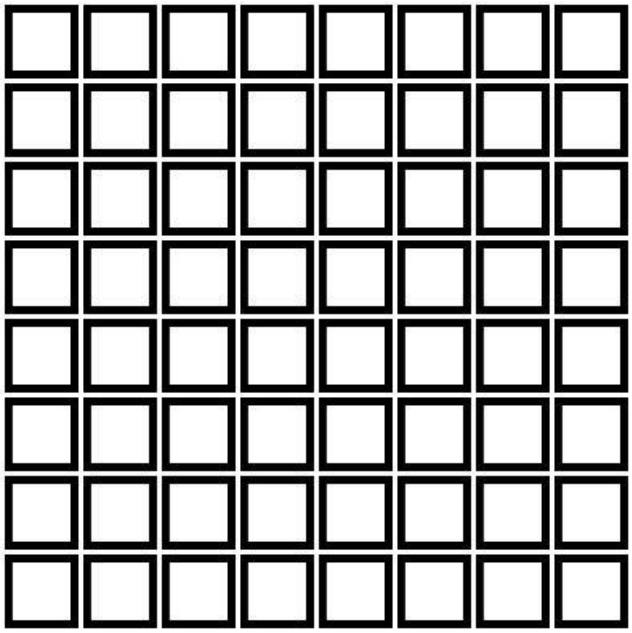
It looks like broken square forms the pattern but we can`t be sure.

Maybe it will be easier to decide if we remove an edge.



Again, is it broken square or intersection? Now it looks more like intersection, right?

Let`s see an original image. The one before squares were broken.



Obviously, full squares make the pattern while in previous example broken squares are the basic shapes.

This visual riddle is an example how lack of indepth knowledge or inadequate viewing point can be misleading in making judgments.

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Solution of the word riddle is "turtle".

(3)

Thought riddle

Time is divided into past, now and future. Before each present moment, which we call now, there is past. After each present moment there is future. Then I ask in what direction does the Time flow?

PAST NOW FUTURE

Can you place a directional marker or draw an arrow line, on scheme above, indicating the direction in which Time flows?

The solution is counterintuitive. If you think that Time flows from past to future then you are wrong.

Let us determine the facts:

1) now is current entropy status of the Universe.

2) Although dynamical, now is immovable. Otherwise it wouldn`t be now. It is constantly this present moment, always changing but never passing.

2) we need to survey like an independent observer having in mind that our apparent motion adds to confusion.

3) now transforms into the future while former now stays in the past. Simultaneously, new future state becomes available as the subsequent potential.

The result is that past keeps stacking, pushing older past more and more backwards.

Hence, it is our apparent motion which seems to go forward (to right). On contrary, Time flows reversely (to left).

Imagine walking of running on a conveyor belt and you will get the picture. If your moving speed is the same as that of a conveyor belt then you will remain in the same place, despite the fact that you are moving. If you move faster then you will get nearer the front side. If you move slower then you will fall behind. The more future is available the more past gets accumulated.

Left is the choice of Nature.

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Riddles are difficult to invent and sometimes even more difficult to solve. As an extension of language and logic, riddles are another great accomplishment of the human thought.

Conclusion

There are knowledges and technologies far beyond current understanding. Our position is similar to those of thinkers born before an invention of the microscope and telescope. We can only guess and fantasize about the still unknown.

Decades of research are behind me. To understand Nature I had to enter multiple scientific fields, mostly physics. I found many interesting informations, even crucial, that are not taught in public schools clearly showing how state education system is not following contemporary science but lagging ten, sometimes even twenty or more years behind.

Quantum physics, discovered 100 hundred years ago, isn't covered by middle class physics curicullum. In late 90's we learned solely about classical, Newtonian mechanics. We learned that second is measured by Earth's rotation regardless of the fact that atomic clock was already internationally adopted standard since 1967.

Children from wealthy families have alternatives. They can go into private school or study abroad, receive special attention and tutoring.

I don't blame teachers because they must follow predetermined program full of trivialities, written by bureaucrats who haven't spent a day experimenting in the laboratory or teaching in a classroom. Same approach is used generally during human life hastening an onset of negative mental conditions. Why is house falling apart? Because tones of bricks were layed without binding substance.

I blame some teachers for non motivational attitude or being too rigid. There are teachers employed due to affiliation(s) who do not demonstrate adequate knowledge to justify their working status.

I prefer less data with emphasis on connectivity and inference.

However, in order to reach universal truths interdisciplinary collaboration must be established. Universe is not just physics. Mathematics, chemistry and biology are also important.

* * * * *

Writing is an immersive experience including a lot of research and thinking. It requires silence and concentration both of which I had in limited amount. It would be perfect to have a cottage near the lake far from distractions and noises of urban environment. Unfortunately, I live in working-class suburb surrounded with religious indoctrination and illiteracy. People yell at each other or engage in leghty, boring monologues. They find alcohol to be the booster, mood stimulator, bringer of inspiration, tongue liberator.

Poor neighbourhoods are fertile ground for superstition and ceremonial rituals. Does God care about lighting candles, attending mass and sacrifial offerings? No, but the priests do. They have special interest in little children cause they are susceptible to impression. It is easiest to prey on those who can not defend. Clergy is one of the worst kind of predators, other being bureaucrats, abusing trust invested by naive, unsuspecting commonfolk. I was walking near the local church. Young girl didn`t want to make sign of a cross with her hands. Father said they will not go home until she does. That is how fanatics spread faith among youngsters: publicly with quiet intimidation while physical torture and starvation are reserved for private ambient.

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Cosmology in curicullum? No. That topic is covered with religious class teaching children that creation took 6 days and separating light from the very rest of the EM spectrum despite science saying first phase (inflation) lasted less than a second and that light is only visible (small) part of the whole range. I will mention here just these two important distinctions because I am working on the book "Guide through religious deception" which will deal with complete theological rhetorics.

I started reading Darwin's book and felt nothing but admiration. All those who oppose his ideas should first read "On the Origin of Species". I mean, he really knows a lot about animal reproduction and his literary expression is scientifically exquisite. It is like denying Tolkien's imagination. You just can't say that evolution is wrong because he details evidence after evidence. To be able to discuss Darwin you must reach his intellectual level.

Not only that I give complete credibility to Darwin`s theory over creationism but I also believe that the human evolution is an ongoing process. After body, human character is next in line to evolve.

We are constantly reminded by religious authorities that eternal fires of torment await those who defy rule of the divine mandate. Not those who are evil but those who defy rule of the divine mandate. Interesting construct that reveals the true nature of religious systems: importance of structural hierarchy with emphasis on individual subordination. At the same time, accumulation of wealth is discreetly progressing.

* * * * *

Overall impression, from my own standpoint reached after years of self-

learning (all material in this book is the result of autodidaction), is for the most part entirely unsatisfying, even diminishing. We spend best time of our life disrespecting own abilities. I believe that each of us has certain tendency toward specific art or skill yet public educational system patronizes only those with affiliations.

Media should be contributing factor in learning but they constantly present biased or inaccurate information. Same as in educational system, program is full of trivialities never reaching firm conclusion about an issue, or reaching superficial one, before moving forward. Government media employs journalists not willing to investigate further beyond official statement, while commercial media employs those who are best entertainers while honest, independent journalism is marginalized. Money dictates words! People are taught not to seek truth but comfort and pleasure. Tell people the truth and they will switch channel.

Copy&paste journalism is frequently used and easily detectable. Recently I red an article about new telescope in Chile named "Vera Rubin Observatory". Author wrote about it without mentioning Rubin-Ford effect, observable anisotropy in the expansion of the Universe, and Fritz Zwicky's significant contribution to this subject. It was exactly Zwicky who first discovered anomaly in Coma cluster, comparing gravitational mass derived from galaxies rotational velocities to the one obtained from their luminosity, which he explained by existence of "dunkle Materie" (dark matter). Original text is then duplicated by newspapers all around the world with the same deficiencies repeated over and over again.

* * * * *

I think that I have succeeded in adressing many crucial questions regarding existence and reality. I didn't provide definite answers rather my own ideas along supporting facts but would it be fair to seek the truth from one person when all the scientists, philosophers and theologians in human history didn't provide nothing better than theories and beliefs?

* * * * *

I wrote this poem inspired with the song Hjartað Hamast (Heart Pounds) played by Sigur Rós, rock band from Iceland:

An edge of the solitude

I woke up. After a long sleep.

All around me was a darkness. Silence.

I was alone.

I entertained for a while thinking about myself.

Who am I? What is my origin (if I have one)?

In the beginning I only knew that I woke up after a long sleep.

Wherever I moved there was only more emptiness, seemingly infinite void without end and meaning. Nothing.

Then I remembered.

I realized my hidden power! My potential!

I grew taking no Time at all and bursted around creating... Time and Space.

Just... Inhaled and exhaled!

I entangled, unfolded, subdivided, flashed and expanded!

Put your hair in the black hole jets and you will get an impression of my

might.

I became everything you see in an entire Cosmos!

I am manifested as an energy. Spirit. Transcended.

Search for me on the outskirts of the spacetime. If you can.

Or search for me in yourself.

Look inside you with your eyes closed.

If there is no end - anything can be a starting point.

Singularity... Growing in energy and density!

Then stretching in all directions.

Maybe I will reach the border one day.

The limit unknown.

Listen the sounds of the Universe.

That is the whisper of creation I left behind.

My silhouette.

The face is far away inside the trenches, among abandoned and forgotten.

Looking toward the horizon, exploring, hoping.

Is there anything on the other side?

Is there... An edge of the solitude?

(26/04/2023)

* * * * *

Learning is a life long progress and with time we can alter our views according to the newly obtained data. We improve our ideas, strenghten our philosophy. If something here in conclusion slightly differs from what was written before in this book it will be refined in following editions.

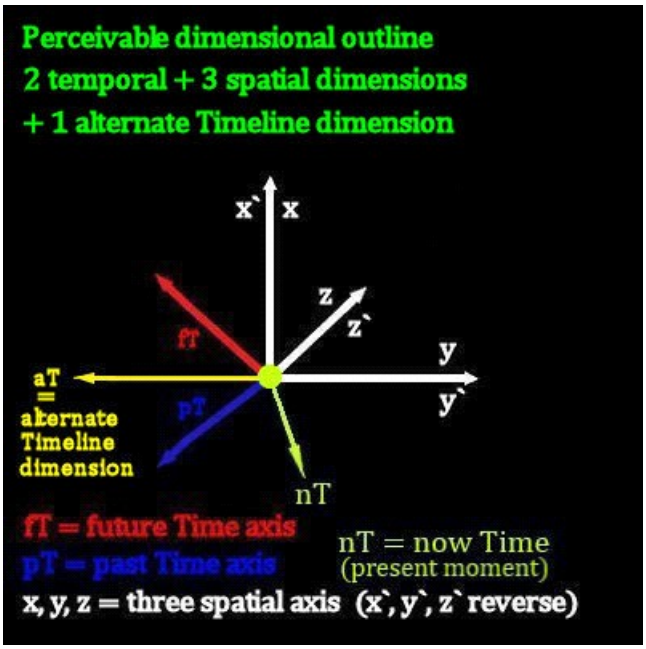
* * * * *

Universe is born from the singularity and to singularity it shall return.

There are four possibilities: 1) either singularity is the God's workplace, sort of cosmic oven, from which matter and energy is created and tossed around or everything is the projection of God`s thoughts. 2) highly evolved specie planted singularity into the void. 3) Nature was created by itself from the state of pure nothingness with singularity being the first logical step in cosmic evolution. What comes after 0? 1. 4) Our reality is a deception. We are part of the simulation.

Ultimately, there are only two possibilities: 1) God* is the source of everything and 2) Nature was intrinsically created by itself.

* God is very complex structure comprised of ever changing dimensions one of which was divided into the five known to us (three spatial and two temporal). How many higher dimensions are there? String theory says 10 (11) dimensions but only God knows for sure.



The singularity could be a conscious organism. Process of inflation is similar to pregnancy. Consequently every living being follows the same footsteps (reproduces). Is singularity externally fertilised or self-replicating? Is it indeed aware of itself or spontaneous? Is quantum field network of cosmic neurons with singularities functioning as intersections, neural synapses?

I am forming this hypothesis: central mechanism which drives the Universe is an interplay of heat and cold. Heat, produced by stars, acts repulsive. Negative temperatures, generated in black holes, act attractive producing gravity. Coldness makes things shrink like making ice from water. On contrary, heat creates gas, expands the volume. Cooling of an intergalactic space squeezes things together while the heat produced in stars makes things float.

Scientists managed to compress water as much as 7% by using special technique called "metal organic framework" which creates 500 bar pressure (1 bar = 0.9869 atm or 0.05 GPa). Diamonds are formed at 4.5 to 6 GPa pressures (45.000 to 60.000 atm). Imagine what kind of pressure is needed to compress matter into the singularity. We need interplay of immense weight and absolute coldness.

Time is current entropy status. When only black holes remain all entropy will be compressed into the singularity(ies). Loosing any meaning, it will be an end of our Space and Time.

To overcome vacuum resistance scalar field was introduced creating matter and antimatter pairs out of zero units of nothingness. Tendency to mutually annihilate was turned into the spin, on macro scale spin into the rotation.

Could the mind of Demiurg, heavenly consciousness, be induced by entirety of moving charges inside the Universe? Maybe. Does it have a predecessor? I think singularity gives birth to its offsprings. An overall mind is the network of all entangled singularities acting together as The One. Formation of scalar field gave rise to equal amount of matter and antimatter followed by partial annihilation (resulting in dark energy 70%), partial disintegration (negative charge is released resulting in dark matter 25%) and partial deformation (negative charge is displaced resulting in ordinary matter 5%). To clarify, dark matter is devoid of electrons which are scattered all over the Universe, where in ordinary matter electrons are orbiting around the core.

Cosmic dark ages ended with an emergence of the primordial black holes which created inward pressure and filament of the spacetime (dark energy) thus enabling the Universe expansion making photons able to travel freely. Meaning, you need the darkness of an intergalactic void to distinct the light.

Hubble tension is due to a difference in amount of dark energy at the beginning of the expansion and later. The more black holes are the more dark energy and the faster Universe expands.

* * * * *

Any sufficiently advanced technology can impose it's user as divine being.

With enough power in their hands some ordinary humans, mortals like you and me, have imposed themselves as divine beings. Remember Pharaohs in ancient Egypt? They called themselves God King's and worshipped King of God's Amun (also spelled: Amon, Amen) later becoming Amun-Ra. Osiris, God of resurrection , was murdered, dismembered and then reassembled, revived and gave offspring Horus, regarded as God of the sky. Isn't Osiris story strikingly similar to Universe fate, divided and then reconstructed back to unity?

Nowadays, there are modern Pharaohs in form of politicians and bureaucrats. Never wrong, never guilty, above scrutiny, acting like the Universe revolves around them and that is why I include them into my metaphysical account. Tv screens and newspapers are full of their fa(e)ces, their speeches are printed and distributed like gospels. I see God King`s over and over again spraying vanity like cheap perfume over smelly armpit. All intellectuals, scientists and philosophers together don`t have nearly as much public space as just one state official.

* * * * *

What will science achieve in the next 100, 1.000 and more years? Intergalactic voyage, mind transfer (immortality), time travel? Things considered impossible in the past are reality today. Likewise, things considered impossible today will certainly become reality in times to come. Events in human history could have already been influenced from the future, either our own or parallel.

Entire Universe could have size of a droplet, looking from outside, created in the higher being`s laboratory we may be nothing but an experiment.

Are we falling in a black hole? Astronomers say that all galaxies in all directions are speeding away from us. Maybe Universe is stationary, or

expanding at slower rate then thought, and we are the ones who is moving backwards, plunging into dark hole as failed product destined for obliteration.

* * * * *

I am always ready and willing to forgive. But who must forgive whom, in what sequence and for what exactly? How did events unfolded before your particular, biased line of sight proclaimed me of being only contributor to an environmental demise? You forgot about root of the problem.

Send your strongest armies, the limitless void is waiting. Gather your best troops, It needs none to counter. Weaponize yourself as much as you want, It will eat you alive and spit dead squashed together with your advanced military technologies.

It knows who you are. It can read your thoughts. It sees your deepest secrets. It recalls evils you have done. And when the time comes you will make amends. It is called a reincarnation cycle where death is an unavoidable condition serving as a transition point not at all the final act.

Do you want to know how I feel? I am soaked in sorrow which is tearing me apart synchronously from inside out and in reverse, intensifying with every new round of torment in a manner of perpetual, never ending circle of agony.

I will always remember you, my friend(s). I will never forget the days we spent together.

On own behalf, I will always carry a seal of the guilt stamped in my heart with burning iron...

And I will never forget maniacs and fanatics who tyrannize(d) the people.

This book is an everlasting personal testimony.

Epilogue

The main cause of structural disintegration is bringing forth illogical, ungrounded, often biased decisions as direct consequence of laziness, negligence, incompetence, corruption and nepotism among ruling elites.

Life is full of inspiration, either good or bad, beautiful or ugly. The question is not how to start but how not to start regarding all the possible themes and material ranging from common experience to scientific knowledge. Just turn your head around and you will find something to write about. Don't force words but let them flow out nice and gently.

One lady at my former workplace once told me that we, as human beings, are all worthless and expendable and will achieve nothing during our miserable lifetimes. I thought who is she to include me in her claim. I had ideas. I had visions. I always saw myself as creative agent. Now I have wrote this book. Does it count as something in her mind? Probably not. Later, together with another female associate, she gave false testimony against me. That surely counts as something for them. They are now worthy and special, their life has received meaning and progressed.

Ordinary people love to report things. They feel important talking to authorities or journalists. They enjoy in wide, disconnected and dramatic elaboration of their irrational beliefs and paranoid suspicions. I believe my neigbour is an alien - says older lady. Why do you think that police inspector asks. Obviously, because he is always flying around with his spacecraft - woman resolutely answers.

But common people are not the problem. Government(s) want you to think that common people are the problem, especially: subcultures, minorities, immigrants, poor, sick, individuals with special needs. In reality, people are never the problem. Problem is finding efficient and longterm solution to an issue. It is easier to create illusions and distractions which governments often tend to do. It is easier to promise cheap gasoline to masses than to engage each particular difficulty there is. Masses bring votes - not single citizens or any legal entity alone. It is why political campaigns always adress few, several at best, general questions instead having complete analysys of the state affairs. Reducing taxes and invoking low passions are among useful strategies while expenditure itself stays corrupted and people turned against each other. Everyone is spying on every else and the system is content.

Why is it about the system and its officials being happy? Shouldn't people themselves be central objective of truly righteous society? It is utopian idea - bureaucrats respond. Very impracticle, mind boggling, overly complicated thought for brains denied of light and air, nutrient rich food, enough sleep and further or any learning. Have you heard for "learning is a life long process" phrase? Don't give a f***, our position in hierarchy is the only thing we care about. One local politician said: soon as you grab the power, you must use every means at your disposal to fortify own re-election. What is Machiavelli doing in domestic affairs? Not neccessarilly Machiavelli because ideas are universal. From one side of the world to another, history is full of those who ruled in a selfish manner using violent and subversive methods for subordination or, oftenly, playing on the card of human ignorance. The less people know the easier to manipulate with them.

Read, learn and discuss because only open mind and free exchange of ideas lead to salvation. Everything else, besides open mind and free exchange of ideas, leads to intellectual slavery and obedience. Not a single important discovery has been made without extending borders of our understanding. How can we extend our views if we stick to one narrative told by religious authorities? You are shackled by ignorance.

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This is the type od jokes I had to listen working in a state service full of mediocre associates: "little girl is complaining to her mother. Every boy has penis and I have none. Mother replies - don't worry, sweetie, you can have all the penises in the world if you want". This particular joke was told by state employee who intentionally released huge amounts of drinkable water into a sewage. When I confronted him, he answered "why worrying? It is not us who is paying". I responded: yeah, forget tax payers when state expenditure is in question but what about people dying from the thirst and you spend so much water invain. We are talking about tens of liters per single hand wash, multiplied by three or four times daily and 5 working days per week. Other state employee violently broke his completely functional chair by throwing it around the room. Immediately after he ordered new one. I didn`t say anything to him just looked away because, judging by his last name, he could be related to the chief of intelligence service.

I remember one female lawyer who claimed that I intrude into judicial case by asking for reference number in order to accurately connect her phone call. I was working as a phone operator for years (shitty job, I took a lot of undeserved criticism but the modest paycheck was regular). She later reported me to my job superiors and I was scrutinized for seeking the reference number. No one explained how else can I properly direct a client to proper department if I can't ask about file fundamentals: things like reference number, lawsuit type or dispute character. I didn't ask for specific names or descriptions. Well, here you are stupid woman with law degree... I promised to include you into my book.

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Several days ago I was walking near a local hospital. An old lady has fallen on the ground and people started to call for help. Nurse came out of the hospital. Old woman is lying with her arm twisted back under her body. Ten minutes nurse is refusing to call for help. I mean, there are doctors inside the hospital: physicians, surgeons, all kind of doctors. It is big hospital with all departments. They even have emergency room. Why didn't she call an emergency? Instead, after inspecting free hand (right) in violent manner she

grabbed old woman's left hand and pulled it under and infront of her body. Then she violently rotated her entire upper section. What if an old lady had broken bone or injured spine? Nurse didn't care. She savagly pulled her hand and observed woman's wrist. I am looking for hospital bracelet nurse said. There is none. Fifteen minutes have passed without nurse calling the help. Finally, nurse calls - security. Two men come and took old woman under her shoulders. They placed her in a wheelchair and drove inside the hospital. What kind of medical help to an injured person is that? This was primitive, unprofessional behaviour.

First problem is nurse reaction. Instead of immediately calling attending physician, she forcefully grabbed old woman's hand and even moved her entire upper body to look for the hospital bracelet. Since when is piece of plastic more important than patient's health? Second problem is arrival of security personnel instead of medical. Third problem is that security also grabbed old woman under her shoulders and lifted her in standing position. All three should have specific training for performing their job. Hospital is not supermarket. Old woman was practically hanging supported by men`s arms under her shoulders. Again old woman, who could easily have fresh fracture, is forcefully moved. Just mere action of moving is dangerous whereelse moving with force. If old woman had injury it surely gotten worse. She kept saying she came from the hospital. Fourth problem is how can an elderly patient walk out through entire hospital without on duty personnel noticing? Fifth problem is that I can not do a thing except write about it. If I make a report against hospital they will counter accuse me for trespassing because I had no personal business justifying my presence in the hospital yard. Nurse and security will be excused because they certainly have ties. How else could they work without knowing elementary rules for handling the victim of a fall? Their lack of imperative skills clearly casts shadow over state and public service employment. Many people are chosen due to nepotism or other kind of affiliation.

I sent a complaint against same hospital one month earlier. They have broken trash bins and a lot of trash scattered around. Grass was needed to be cut. I asked does walking in green scenery, on fresh air, beneficialy affects human health? They answered how they must buy new grass cutting equipment. Basically, that was all they responded. I repeated other two

questions. Answer was the same: we must buy new grass cutting equipment. You can not argue with corrupted administration. They can simply call authorities and say you are bothering them.

When I ask bureaucrats anything they simply ignore me or formally reply without solving an issue. I have send letters containing different questions to ministries of finance, health and social security but received no answer. I contacted postal service also without any reply. No luck with Croatian consulate in Israel either. Other instances were silent too. Here only affiliations work. Without connections in hierarchy you can not get a single problem worked out. No one cares about citizens rights or Constitution. If you have someone to speed up your case then maybe you have a go. Otherwise, forget it or spend money on attorneys.

My questions to state institutions and services remain echoing in eternity.

Recently I called health emergency service, but no one answered for more then ten minutes. There was medical outpost just across the street. I went there but technician on duty discarded my request for assistance saying there is nothing to worry about and continued sleeping. Finally when I reached health service by phone I asked female operator to send ambulance because there is a young man lying on the ground, having bloody knee and barely conscious. I gave precise location and said that I suspect heavy intoxication or poisoning of sort. Operator insisted that I approach injured person and try talking to him. I replied that if I could help him then I wouldn`t ask for an emergency. He probably needs proper detoxication, cold shower, rest and what can I do about it? You think that talking to him will make him better? Will you send an ambulance or what? I disconnected the call because there was no use. They haven`t dispatched the team. What kind of emergency is that? I gave precise location and I asked for help. They didn`t do a single thing! I also called the police. They answered promptly but no one came either. You can die wounded and alone but the state doesn`t care. All they care about is procedures. It wouldn`t surprise me if I had to fill a form before they send emergency. Maybe they would ask me to correct the misspelling, done in hurry, or to insert punctuation. There were asylants nearby, several of them sitting on a benches in direct vicinity, not bothered

by the situation. They didn`t even try to help. One muslim woman was babbling about demons from alcohol.

Some people are ignorant, incompetent, irresponsible and uninterested.

I will quote Karl Popper: "*True ignorance is not an absence of knowledge but the refusal to acquire it*".

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By asserting "law and justice are not the same" instead of recognizing law as a mean to get closest possible to the justice, while procedure as a path for discerning the truth, many law practitioners think of procedure itself as an ultimate destination rather than working tool for reaching a fair verdict.

Why bureaucrats consider form more important than meaning? Because it is easier to just read papers, check for spelling errors and decide on superficial basis than to investigate matter properly. Former raises statistics much faster and hides personal incompetence. According to administrators, syntax is always above semantics. Like when (fictional) dr. J. Evans Pritchard, in Dead Poets Society, measured greatness of a poem by drawing graph with perfection and importance axis and then calculating an area in between.

One assistant state attorney said to me: "I love to see accused wiggle and broke under sheer weight of the criminal charges ". I asked what about proving guilt and being considered innocent before verdict? Guilt is implied with accusation, needs no proof besides paperwork, and it is defendant who must prove innocence - he explained. Then I asked what about the fact that state attorney's office broke dozen of criminal law articles, falsified witness statements and presented court with paradoxical medical record just to get me prosecuted? Regulations don`t apply to us, the state, they apply only to the common people.

What about finding the truth? What about justice being delivered? What about not being biased? What about reintegration into society? What about human and legal rights?

Based on my own experience I can conclude as follows: 1) Truth and justice are not important. The procedure itself is the only thing that matters. 2) Inclination is inherent to the procedure. 3) The point of the legal system is to isolate and destroy targeted individual. 4) Your only right is to be processed.

The most unfair thing they introduced is one-way judicial procedure where defendant is stripped off the right to defend. They simply find you guilty based on the paperwork provided. There is no examination of evidence, no testimony contestation, no standing in front of the judge(s) and personal delivery. Someone, somewhere decides that you are guilty. You ask about fair trial? There is no trial at all, just a pure bureaucratic routine involving only the prosecution and sentencing.

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I feel like an invisible man whenever I contact the system, that disorganized, corrupted network of mediocrities hidding behind forms and procedures. My questions remain echoing in eternity or they respond something pro forma regardless how stupid their response sounds. Never once they properly adressed any of my questions, even less solved any of my problems.

People are divided into two main classes: those with affiliations and those without.

"Dumpsterman, dumpsterman

here comes a dumpsterman.

He is not like us

Not like all of us

Because we are better than him

End quote."

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I left my job in the state service after I was wrongly accused and prosecuted in one criminal and one ethical case the sole purpose of which was to personally discredit me. They didn't examine any evidence in ethical case. They just pronounced me guilty. Criminal charge is pending for years because the process is still ongoing (three years until now without any move besides strictly administrative). I sincerely hope that at least judge will be finally fair enough to examine evidences in my favour which clearly speak of my innocence.

Three years in a row I legally deserved promotion. They ignored me and dismissed my justified requests for advancement. Afterwards, to personally discredit me, they found me guilty in ethical case because I wasn`t doing things out of my job description and under particular circumstances. Not a single evidence was examined. I was found guilty because I was accused. Ethical jury decided that mere instance of accusation implies my guilt... As phone operator, I was payed to connect phone calls because state was too cheap to invest in automated service. They bought it after I left and when person of proper lineage replaced me which points to the fact that everything was staged. I cited e-mail adress, or helped anyway I could, to those who said they were old or handicaped. I refused to cite e-mail adress to young, physically healthy individual who already spent half an hour of my working time blocking line for tens of other parties, citizens with legitimate requests, asking for judicial case that he was not involved with. During communication I found that he was typical provoker whom I regularly encountered since I had to talk with different profiles from petty criminals to sentenced lunatics. Question remains, why haven't bureaucratic instances making decision checked evidence in the course of respective ethical

process? They just read the papers and concluded that I am guilty. I wasn't allowed to verbally present my defense, not even after I invested an appeal. What kind of process is that? Kafkian. All they had to do to determine my innocence were two simple things. First, check the file case number provided by person who reported me. That file case is unrelated to this specific person. Moreover, with respect to the service regulations, this specific person wasn`t eligible to be informed about that file case because he was not an involved party. He hasn`t even been an interested party. That file case was divorce lawsuit with totally different parties involved. Meaning, I was punished because I respected the judicial codex. Second, ask the question how can two female witnesses hear the phone call I had with the person who reported me? We were two floors apart. Obviously, they were lying. Why? Because I had to be removed. I can think of three reasons. Having foreign roots and being religious sceptic, I was considered undesirable among chauvinistic mob. Then, I respected the law which is an obstacle for corruption native to Balcan area. Third, incompetence of bureaucratic hierarchy. My best guess is that all three factors contributed equally.

About author

I am independent thinker, free writer and open-minded enthusiast. As such I have no health insurance, social security benefits or any income other than what I earn by collecting empty bottles.

People regularly instruct me to beware of what I say because you never know who is listening. Free speech is prescribed by Constitution but in reality circumstances are totally different. Afraid of talking I started writing. They were horrified. Are you crazy? Writing is even more dangerous because written word stays longer and you never know who is reading. If I can not openly speak and write then what can I do? You can bow your head and keep quiet. Well, that is not the type of society I prefer. If I can not express my thoughts frankly I shall venture in search of such place, where people live in honesty and mutual understanding not in fear and despair, or better yet I will strive to build such place exactly where I am now, where I was born. Knowing that it is hard to plant flowers in harsh environment, settling in civilized country is certainly more comfortable than staying among savages.

Electronic equipment made writing much easier than before. I can not imagine searching through hundreds of pages to find something amid thousands of notes unsystematically scattered around and what about arranging all that mess into proper volume, copying by rewriting and distribution? Nowadays we can record our thoughts and ideas effortlessly. I just grab my smartphone, tablet or laptop. In absence of gadgets I still use pencil and paper.

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